IDG.net

CRACKER NABBED

A Boston student is charged by the FBI in a string of alleged attacks, including NASA. Page 4

E-BUSINESS TECHNOLOGY

We take offerings from five major vendors and get the word from customers on how well they really work. Page 68

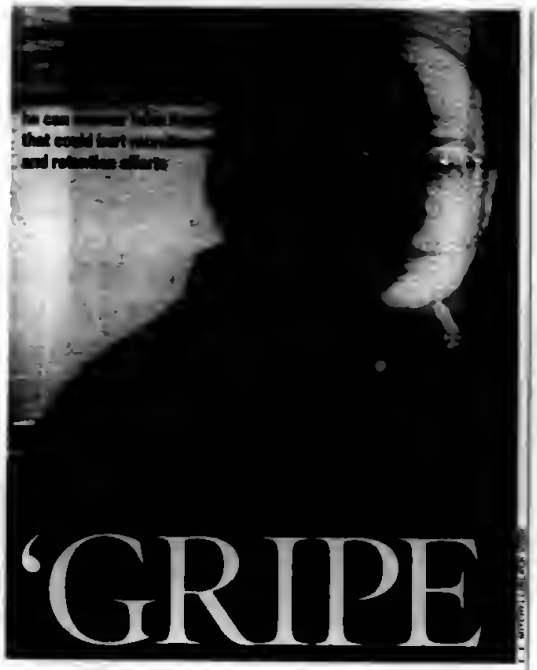
CAN'T GET PROMOTED?

Some people just can't get a promotion, no matter what they do. If you're one, here's what to do. Page 54

COMPUTERWORLD

THE NEWSPAPER FOR IT LEADERS • WWW.COMPUTERWORLD.COM

FEBRUARY 28, 2000 • VOL. 34 • NO. 9 • $4 COPY



'GRIPE SITES'

O WHAT'S IT REALLY LIKE to work at a particular company? Julia King reports that today's job applicants check Web sites and message boards that are full of insider gripes about low pay, long hours and miserable managers. In today's tough recruitment market, IT managers would be wise to check out what's being said at the "electronic watercooler" — even though much of it comes from disgruntled employees — because job candidates will be asking for a response.

Story begins on page 52.

NEWSPAPER

8EVEBJFT8 8888888CAR-RT SORT#48-052
$4818GUIZ984PB8858 OCT 00 002 10915
UMI 138
UMI
PO BOX 994
ANN ARBOR MI 48106-0994

B-TO-B HARD TO SPELL WITH XML

E-commerce growth may stall before disparate efforts yield concrete standards

BY CAROL SLIWA AND JULIA KING

Forget the multibillion-dollar market forecasts. For now, business-to-business e-commerce remains in search of a common framework to help companies efficiently execute transactions over the Internet.

The promise lies in Extensible Markup Language, or XML, which companies can use to categorize and tag data for exchange between disparate technology systems. But reality bites.

Corporate users must sift through an alphabet soup of technology frameworks and data definitions being worked on by sometimes competing clusters of standards and industry groups and vendors, with little chance of an electronic Esperanto surfacing anytime soon.

"The challenge really is, at a certain point, to simplify. Once they've got these standards defined and stabilized, start converging them," said James Kobielus, an analyst at The Burton Group in Midvale, Utah. But Kobielus estimated that this convergence could take five to 10 years to settle into a concrete state, adding, "It's going to be a mess."

Right now, at least a dozen vertical industries have groups working to define the types of documents they need to exchange and the various data elements that must be part of those documents.

Tom Costello, chief technology officer at E-Steel Corp. in New York, which operates an Internet-based steel marketplace, said industry groups

Standards, page 97

XML Efforts

Vertical industry groups, from computer technology to health care and even shoe manufacturing, are involved in defining document types and schema. Two examples are:

ACORD (Association for Cooperative Operations Research and Development), the insurance industry's standards-setting arm, which recently approved transactions for personal auto quotes, personal auto application submissions and business owners' policy quotes.

OpenTravel Alliance, which will soon publish a travel industry customer profile format.

ONLINE BUYERS TOUT AUCTION GAINS

Web-based purchasing rewards early adopters

BY JULIA KING

Erase the image of backroom purchasing agents thumbing through fat paper catalogs or haggling over prices with suppliers by phone.

At General Motors Corp., The Quaker Oats Co. and state government offices, they're online, racking up millions in savings by buying parts, grain, rock salt and other raw materials at Internet-based auctions.

Online Auctions, page 97

AT A GLANCE

How Internet Auctions Work

Not all auctions are the same:

IN REVERSE AUCTIONS, buyers publicize what they want. Prequalified suppliers bid for the business.

IN LIVE AUCTIONS, suppliers can see competitors' bids, which can be revised during a preset time period.

- Buyers pay auction exchanges a percentage of their total purchases or savings.
- Suppliers don't pay a fee but must install software to participate

IT GUIDELINE FOR LOGISTICS ON TAP

Ad hoc group sets rules to coordinate shipping

BY CRAIG STEDMAN

First, there was a move by manufacturers and retailers to use the Web to collaborate on production plans and demand forecasts. Now, the same thing is starting to happen on the warehousing and transportation side of the supply chain.

Several blue-chip users are quietly forming an ad hoc group to develop business and technology guidelines for better coordinating the planning, scheduling and tracking of product shipments.

The group will be part of the Voluntary Interindustry Commerce Standards Association, a retail-oriented organization in Lawrenceville, N.J., that's also overseeing the development of guidelines for collaborative planning and forecasting.

Logistics, page 16

Unicenter Helps 1-800-FLOWERS.COM Blossom.

1-800-FLOWERS.COM [illegible] ing and [illegible] complex [illegible] wide offering [illegible] speed [illegible]

Unicenter TNG [illegible] and manages 1-800-FLOWERS.COM's worldwide infrastructure and support [illegible] enabling them to fulfil online orders with subsecond response times to [illegible] million customers. To [illegible] 1-800-FLOWERS.COM [illegible] defects [illegible] to [illegible] eBus [illegible] FLOWERS.COM and wake up and smell the roses [illegible] TNG. For more information, visit us at internetsolutions.cai.com.

1-800-flowers.com℠

COMPUTER ASSOCIATES

Unicenter TNG

WEB-IFYING YOUR STAFF

Jim Lubinski at Galileo International (pictured) says IT pros need to supplement their technical smarts with soft skills if they want to be able to build great Web sites. Page 50

HANDFUL OF COLOR

At last, a color screen for the Palm. Our reviewer loved the new screen, but corporate users might care more about new security and menu features of another Palm device. Pages 64 & 65

COMPUTERWORLD THIS WEEK

FEBRUARY 28, 2000

NEWS 4

4 CAPITAL ONE NAMES women co-CIOs — one with a business background, one with tech — to better align IT and business.

6 LEAP YEAR POSES few problems. Y2k repairs fixed most potential errors.

8 HEALTH SITES DRAFT ethics code to restore confidence in privacy protection.

9 LINUX VENDOR launches bundles of the free operating system with for-fee apps like Oracle and Unicenter.

10 OBSERVERS QUESTION Microsoft's motives in a policy change that requires permatemps to take 100-day leaves.

12 FORD WINS temporary judgment against cybersquatter, using a federal antisquatting act.

14 CELL PHONES COLLIDE with Web browsers at a wireless technology show in New Orleans this week.

16 MANUFACTURERS struggle to overcome cost, complexity of e-commerce conversions.

20 ANTITRUST CASE end draws nearer. Judge presses Microsoft hard on business practices related to Windows.

MORE

Editorial Letters..... 34, 35
How to Contact CW..... 96
Shark Tank..... 98
Stock Ticker..... 95
Company Index..... 96

BUSINESS 41

42 VENDORS INVEST in B-to-B exchanges they help to build, trading speed, technology and service for equity in start-ups.

42 USERS WARN that combining R/3 and data warehouse rollouts isn't worth the effort.

44 MANUFACTURERS rally to try to build e-commerce attitudes at old-line firms.

46 SIERRA CLUB OFFERS a great atmosphere to work in IT but not the paycheck to match.

46 EXCHANGES SHOW how to make B-to-B work, bringing buyers and sellers together.

52 BITCH SITES are more than a nuisance; they're where your employees air corporate dirty laundry. Can you stop them?

QUICKSTUDY

56 INTANGIBLE ASSETS carry a tangible punch on Wall Street.

59 CAREER ADVISER Fran Quittel takes on the question of whether Windows developers need to build their Linux skills.

TECHNOLOGY 61

62 McAFEE OFFERS new tools for centralized virus protection.

63 A COMPUTER associates executive says recent denial-of-service attacks succeeded largely because of poor Web site systems design.

HANDS ON

66 WINDOWS 2000 Professional isn't a do-it-yourself project, writes senior reviews editor Russell Kay.

QUICKSTUDY

67 CUSTOMER relationship management helps you take full advantage of every point of contact with your customers.

68 E-COMMERCE customers tell us how well Web "solutions" from mainstream IT vendors worked for them.

EMERGING COMPANIES

72 ANTISPAM SERVICE from Brightmail Inc. determines whether incoming e-mail is appropriate and then updates filtering rules on client's servers.

SOMEONE USED TO HAVE A LITTLE COFFIN THAT HAD A COPY OF CC:MAIL WITH A STAKE THROUGH IT THAT ONE OF OUR VOLUNTEERS SENT TO US.

DAVE SIMOR, DIRECTOR OF INFORMATION AND COMMUNICATIONS SYSTEMS AT THE SIERRA CLUB, DESCRIBING THINGS IT PEOPLE THERE KEEP ON THEIR DESKS. SEE WORKSTYLES, PAGE 46.

Online: Our Win 2k Watch has forums, case studies, surveys and more.
www.computerworld.com/win2k

OPINIONS

34 DAN GILLMOR says that despite the modest fanfare surrounding the debut of Windows 2000, don't think that Microsoft's heyday is over.

35 GEOFFREY JAMES says Y2k took corporate IT's focus off a bigger problem: security.

36 MICHAEL CUSUMANO says that if you're looking for quality software or a case study in software quality, look to India.

36 DAVID WELDON says Washington is using outdated labor statistics as Congress again tackles the H-1B visa cap issue.

44 KEVIN FOGARTY warns that fear of being left behind can drive failure — or success — on the Web.

46 JIM CHAMPY breaks down management into three styles: creators, capitalizers and consolidators.

98 FRANK HAYES says Microsoft's impending exit from Java is good news, for corporate IT shops most of all.

AT DEADLINE

Big Three to Team Up

In an unprecedented move, the world's three largest automakers – General Motors Corp. in Detroit, Ford Motor Co. in Dearborn, Mich., and DaimlerChrysler in Stuttgart, Germany – Friday unveiled plans to join forces on a common Internet automotive trade exchange. GM, Ford and DaimlerChrysler will share equal equity stakes in the new venture, which will operate as a separate company and from a new Web address, officials said. It will offer procurement transactions for the Big Three automakers, other automotive manufacturers and their extensive supply chains.

Portal for Plastics Industry in Works

PolySort Inc., a five-year-old Internet company that operates two business-to-business portals, is setting up a new online marketplace for the plastics industry. The Akron, Ohio-based company last week announced plans to merge its plastics and rubber industry Web site with that of a new plastics industry e-commerce company called PolymerSite.com, based in Cleveland.

Intel Chip Set Delayed

Intel Corp. will be about two months late shipping server and high-end workstation components to its customers. The components are memory hubs used with Intel's 820 and 840 chip sets.

Short Takes

Antivirus software vendor TREND MICRO INC. posted a warning on its Web site that hackers have released new tools that could make attacks like those that temporarily shut down popular Web sites such as EBAY INC. and AMAZON.COM INC. earlier this month even easier. . . . MICROSOFT CORP. last week staved off a denial-of-service attack, during which it suffered performance and availability problems but didn't shut down. . . . NATIONAL DISCOUNT BROKERS GROUP in Jersey City, N.J., said its Web site, www.ndb.com, was down for nearly two hours Thursday, the apparent victim of a denial-of-service attack. The company said it was cooperating with FBI investigators.

Capital One Fills CIO Slot With Business, Tech Execs

Joint chiefs say closer alignment will result

BY MARIA TROMBLY

CAPITAL ONE Financial Corp., known for the high level of integration between its information technology and business operations, is taking the unusual step of splitting the CIO job between two people — an IT expert and a business professional.

The two women — Laura Olle, 47, and Marjorie M. Connelly, 38 — say they will be able to draw on their respective areas of expertise to further an even closer alignment between IT and business at the Falls Church, Va.-based company.

According to Bill Bradway, an analyst at Meridien Research Inc. in Newton, Mass., the Capital One announcement is unusual because the two executives will be sharing responsibilities and decision-making within a single corporate structure instead of acting as CIOs of different business units.

Separate Responsibilities

For example, he said, at Boston-based Fleet Bank, there is a CIO for the bank, a CIO for the Fleet Mortgage Group Inc. subsidiary and a CIO for the Robertson Stevens investment bank, another subsidiary in San Francisco. Similarly, The Chase Manhattan Corp. in New York has separate CIOs for its retail and wholesale banking operations.

Other companies differentiate between CIOs and chief technology officers, with the chief technology officers typically handling day-to-day operations and the chief information officers responsible for setting and aligning business goals and strategies. Those companies include Merrill Lynch & Co. in New York and GE Electronic Capital Corp. in Stamford, Conn.

Olle and Connelly replace James P. Donehey, who served as CIO for more than five years and who will leave effective tomorrow to spend more time with his family.

Olle, formerly senior business information officer at Capital One, joined Capital One just last fall, but she has more than 20 years of experience in IT and management consulting. She served as senior vice president of information systems and services at McLean, Va.-based Freddie Mac and has held key IT positions at Washington-based Marriott International Inc.

Connelly, the former senior vice president of domestic card services, joined Capital One's management team six years ago. She has 15 years of experience on the business side of the credit-card industry, having worked in customer service and operations at Wilmington, Del.-based First USA Bank NA, among others.

CAPITAL ONE'S Marjorie M. Connelly, left, and Laura Olle will both act as decision-makers in the CIO position

Connelly said she and Olle will share the decision-making process.

"It's a huge job," said Olle. "I enjoy having someone to share it with, having someone to bounce ideas off of. Marge [Connelly] has all the infrastructure, and I have all the development activities, but there is still the idea of us co-leading." ◗

Alleged NASA, DOD Cracker Is Charged

Suspect also meddled with systems at ISP

BY ANN HARRISON

A student at Northeastern University in Boston was charged last week with using a hijacked corporate Internet account to attack NASA and Department of Defense computers and damage servers of an Internet service provider (ISP).

According to a statement issued by the U.S. attorney's office in Boston, Ikenna Iffih, 28, was charged with three counts involving unauthorized access to computers.

"The defendant gained illegal access to several computers, either causing substantial business loss, defacing a Web page with hacker graphics, copying personal information or, in the case of a NASA computer, effectively seizing control," said Donald K. Stern, U.S. attorney for the District of Massachusetts, in a statement.

Attempts to reach lawyers for Iffih were unsuccessful.

Investigators said that last April, Iffih obtained unauthorized access to a corporate Internet account known as emergon@rcn.com and used it to access a Defense Logistics Agency computer in Columbus, Ohio. He then allegedly used a service known as Telnet proxy to forward traffic through that computer to mask his address.

After hiding his location, Iffih allegedly gained unauthorized access to a server owned by Zebra Marketing Online Services (ZMOS) in Bainbridge Island, Wash., where investigators said he "recklessly caused damage to the computer and caused a significant loss of business to ZMOS." According to a complaint filed by U.S. attorneys in Seattle, a ZMOS systems administrator detected unauthorized changes in password files and several Trojan horse programs. The operating system had to be reinstalled and all data files reconstructed, a process that took about four days. ZMOS couldn't be reached for comment.

In May, prosecutors allege, Iffih used the same pilfered corporate account to attack a NASA server located at the Goddard Space Flight Center in Greenbelt, Md., where he obtained root access that let him read, delete or modify files on the system. He then installed a sniffer program on the system that captured NASA log-in names and passwords.

Government attorneys said the compromised NASA Web server didn't affect classified information or interfere with satellite command or control.

If convicted, Iffih could face a maximum penalty of 10 years in jail and a fine of $250,000. Prosecutors said Iffih wasn't connected with the wave of denial-of-service attacks on e-commerce sites that occurred earlier this month. ◗

AT A GLANCE

Cracker Trail

How investigators tracked down Ikenna Iffih:

- **Compared** logs of compromised systems' connection times with suspected ISP
- **Issued** subpoena to Erols, an ISP, for connection activity on hijacked account used to launch attacks
- **Obtained** phone number used to connect with Erols from phone company via court order
- **Placed** residence under surveillance and traced license plates of cars parked nearby
- **Contacted** U.S. Postal Service for names of residents at suspected address
- **Used** federal warrant to search suspect's residence
- **Conducted** forensic search on seized computers

Source: U.S. attorney's office, Boston

© 2000 Sprint Communications Company L.P.

If you think you have to be a dot.com to need an Internet strategy,

we need to talk.

You may never sell products or services to consumers directly over the Internet, the way the dot.coms do. But Sprint can still enable you to become an e-business and turn your technology expenditures into high-yield investments.

What does Sprint bring to the table? For starters, unsurpassed expertise to provide the limitless, simultaneous connections an e-business needs. And our custom-tailored Internet solutions and e-business applications can help you leverage your communications to drive productivity.

Whether you use the Internet, intranet, extranet, or any combination, the right strategy and the right partner can help you get the most out of them. Give Sprint a call, and we'll show you how.

1-888-369-3282 or visit www.sprint.com/business

Sprint.

The point of contact℠

Users See Smooth Leap Year

While on the lookout for Feb. 29 date glitches, companies are confident systems will be fine

BY PATRICK THIBODEAU, KIM S. NASH AND KATHLEEN MELYMUKA

IT'S NOWHERE NEAR as big as the year 2000 problem, but the leap year that happens on Tuesday could create some systems problems if programmers didn't get the date rules right.

Companies and government agencies are taking some modest precautions to keep an eye out for leap year date glitches that may have been missed in year 2000 testing.

But the biggest problem may be getting workers to be on the lookout for errors, especially after the relatively problem-free year 2000 rollover.

"It's been a little bit of a struggle to get people to take it seriously because we were so very successful with the millennium," said Mickey Galatola, the Y2k manager at PECO Energy Co. in Philadelphia. "But one thing that's different is that this is a workday. I keep emphasizing that I don't want anybody to show up and not be able to get on their system. That's why it's so critical, so people are taking it seriously."

BURNS: Successful Y2k rollover easing concerns

PECO's information technology managers will meet at 8:15 on the mornings of Feb. 29 and March 1 to review overnight test results. If anything has gone wrong, senior managers will be notified, said Galatola.

The fact that this is a leap year may not have been obvious to programmers.

Years divisible by 100 are normal years, and if programmers used that rule, they treated the year 2000 as a normal year. But the year 2000 is a leap year because it is divisible by 400. If programmers weren't aware of that, it may be understandable: The last time that happened was in 1600.

The relatively problem-free Y2k transition has led John Koskinen, who headed the White House's year 2000 effort, to be confident that the leap year won't cause many glitches. "It's unlikely that systems are going to collapse; it's unlikely that we're going to have major issues at all," he said.

The White House plans to revive its year 2000 operations center to watch for problems this week, but not to the same extent that it tracked the year 2000 problem.

John Burns, vice president of projects at Canadian Imperial Bank of Commerce in Toronto, said he found two kinds of leap year problems. Some software didn't recognize Feb. 29 as a valid date. Other programs, such as those calculating interest on loans, didn't account for the extra day.

The bank won't have IT staff pulling all-nighters Feb. 28, Burns said, mainly because its year 2000 rollover went so well that it doesn't anticipate problems. "We will have key technical people on call but won't man any command centers," he said.

Kathy Donovan, an application technology manager for the state of Delaware, said that if problems do occur, they will be easy to recognize and fix. Unlike the year 2000 problem, the leap year date glitches aren't likely to be buried in code. "The risk is pretty small, but there is always the potential," she said.

At Agricredit Acceptance LLC, leap year work was done at the same time as year 2000 remediation, said Bruce Cheek, IT manager at the financing company in Des Moines, Iowa.

Except for one input screen in a credit application, all Agricredit's software withstood the Feb. 29 challenge during testing, Cheek said. ◗

AT A GLANCE

Leap Year Rules

While testing for the Y2k problem, officials discovered leap year system errors due to programmers not knowing the third rule:

RULE 1 Years divisible by 4 are leap years. Thus, the year 2000 is a leap year.

RULE 2 Years divisible by 100 are regular years. Thus, the year 2000 isn't a leap year.

RULE 3 Years divisible by 400 are leap years. Thus, the year 2000 is a leap year.

SOURCE: PRESIDENT'S COUNCIL ON YEAR 2000 CONVERSION

ActiveX Control May Open Security Hole

Microsoft says it will issue a patch

BY ANN HARRISON

Microsoft Corp. last week said it will issue a patch for an ActiveX control program that can download software signed by Microsoft without prompting the user for permission to install it.

Critics fear intruders could use the control to install a Microsoft component with a known security hole, which could then be used to take over a user's computer.

ActiveX controls are reusable programs used on Web sites to download files and execute commands on users' computers. The Install Engine Control, called Active Setup, is delivered with several versions of Internet Explorer to provide remote software installation over the Internet and allow the download of signed executables.

Usually the installation program will ask the user before downloading software. But Spanish Web designer Juan Cuartango discovered that in the case of Microsoft-signed software, the software is silently installed without asking for the user's permission.

"I would conclude that [Microsoft] has a backdoor to install and execute software without the [user's] approval," Cuartango said in a statement on his Web site (*http://angelfire.com/ab/juanl23/iengine.html*).

Cuartango, who posted a demonstration of the vulnerability on the site, warned that data on the user's computer could be exposed if signed Microsoft software can bypass a security configuration.

He said he's also concerned that Microsoft could potentially use the hole to look at "cookies" collected by people who visit Microsoft Web sites.

Cuartango added that he doesn't believe that Microsoft would actually use this software maliciously.

Microsoft responded that Active Setup "improves the user experience." But a company spokeswoman acknowledged that "the control in question could be abused by a malicious Web site operator to install an obsolete piece of Microsoft-signed software on a user's computer."

"Under this scenario, a user's data is not at risk," the spokeswoman added.

Nevertheless, Microsoft said it will make changes to the control to provide users with additional warnings before signed software is loaded.

Microsoft said a patch for the potential hole in Active Setup will be posted on the company's security Web site (*www.microsoft.com/security*) when it's available. ◗

IBM to Ease Online Backups

BY JAIKUMAR VIJAYAN

IBM this week will announce new software technology that it claims will allow administrators to back up a DB2 database without bringing it down.

The capability is essential for corporations that run around-the-clock operations, said Eric Godfrey, manager of database administration at Tyson Foods Inc. in Springdale, Ark.

Tyson spends more than five hours every Sunday backing up just one of its two production databases to off-line storage media. The company hopes to drastically reduce this maintenance window by using IBM's technology, Godfrey said.

"There's increasing pressure from business units in terms of having our [systems] available all the time," he added.

At the core of IBM's new functionality is a DB2 enhancement that exploits the FlashCopy and Peer-to-Peer Remote Copy capabilities of IBM's new Enterprise Storage Server technology.

These features let administrators create mirror images of active production volumes on separate storage systems.

The latest tweak to DB2 enhances this capability by allowing users to continue conducting transactions against the primary database while the mirrored image is being backed up, according to Sanjoy Das, an IBM storage manager. Once the backup is complete, the mirror volume is resynchronized with the production volume.

"IBM is adding hot-split capabilities to DB2, which is similar to what Oracle has been offering for several years," according to Steve Duplessie, an analyst at The Enterprise Storage Group in Milford, Mass. ◗

Correction

A photo that ran with a Feb. 14 Opinion column ["Government needs better Net approach, results," page 34] wasn't of the author, Bob Campbell. Here is the correct photo.

You will never become an e-business by piecing together software you already have.

Only Oracle has a complete e-business suite.

ORACLE

SOFTWARE POWERS THE INTERNET™

©2000 Oracle Corporation. All rights reserved. Oracle is a registered trademark of Oracle Corporation
Other names may be trademarks of their respective owners

www.oracle.com

BRIEFS

Encryption Program Ruled OK to Post

The U.S. Department of Commerce said its new encryption export policy permits University of Illinois professor Daniel Bernstein to post source code for his Snuffle encryption program. Instead of requiring Bernstein to get an export license for each person who views his Web site from outside the U.S., he must now send a copy to the government and pledge not to charge royalties for use of the code.

A U.S. Court of Appeals ruled last May that the former policy was a violation of Bernstein's freedom of speech.

CIA Training Cyberwarriors

The CIA warned that it's detecting more cyberwarfare programs being developed by nations such as Russia and China. Information warfare, which targets both civilian and military systems, is being included in war college curricula and military planning, testified John Serabian, the CIA's information operations issues manager, before the Joint Economic Committee of Congress last week.

U.S. Charged With Industrial Espionage

European parliamentarians belonging to the Green Party last week demanded the creation of a committee to probe allegations that the U.S. is using the Echelon electronic surveillance system to conduct industrial espionage in Europe. The system is allegedly capable of intercepting phone, fax and e-mail data around the world. It was originally set up for Cold War military surveillance.

Security Coalition

In the wake of the recent distributed denial-of-service attacks, 20 Internet and telecommunications companies have organized a coalition to raise security standards for Web sites and network operators. The Alliance for Internet Security has released guidelines that recommend the reconfiguration of routers and the addition of firewalls.

Privacy Fears Spur Health Groups' Moves

Health firms work to disclose practices, promote consumer protection on Web sites

BY JULEKHA DASH

TWO HEALTH care industry coalitions are developing ethical guidelines to restore public confidence in the privacy of personal health information collected at Web sites.

But analysts said the guidelines won't deter further investigatioos by the Federal Trade Commission (FTC) unless they include strong enforcement measures.

Earlier this month, the Internet Healthcare Coalition in Washingtnn — which includes government, academic and industry representatives — published the draft of a code of ethical guidelines for medical Web sites nf all sorts.

After an eight-week public comment period, the coalition plans to release the final version in mid-May.

One nf the proposed guidelines (see chart) urges health sites to warn users that third parties, sucb as banner advertising servers, may collect visitor information without the host site being aware of it.

Lack of Notification at Issue

Earlier this month, the California HealthCare Foundatioo in Oakland, Calif., reported that the third-party affiliates of some health Web sites collect personally identifiable information about users through cookies, profiling and banner ads without making the practice explicit to consumers.

Because of such concerns, Mediconsult.com Ltd. in Toronto in December stopped accepting banner advertisements that reside on third-party servers, said John Mack, Mediconsult's director nf drug information and president of the Internet Healthcare Coalition.

A health Web site "may say they're not responsible for the privacy policies nf third parties, [but] content partners should abide by the same privacy policies" as the site, said Kelli Amick, a spokeswoman at VHA Inc., an Irving, Texas-based hospital cooperative.

Amick is also a member of Health Internet Ethics, a committee nf representatives from 20 Internet health care companies. The committee plans to puhlish detailed ethical guidelines in two weeks.

But Mack said the coalition hopes the guidelines will boost public trust in Internet health care and enable the industry to police itself, rather than have tn accept government enforcement. "If ethical behavior fails, then the nnly recourse is law," he said. How the code will be enforced is still unclear.

The FTC is already looking into the privacy practices at some Internet companies, including HealthCentral.com in Emeryville, Calif., and iVillage.com Inc. in New York.

Neither company returned calls for comment, but HealthCentral.com has publicly denied any privacy abuses.

Elizabeth Boehm, an analyst at Forrester Research Inc. in Cambridge, Mass., said she doubts the Coalition's efforts will keep the government from launching investigations. "Self-regulation won't happen, even if these guys dn their best to stay in front. There's so much to gaio in using the Internet as a tool fnr sharing and collecting information," she said.

Wes Rishel, an analyst at Gartner Group Inc. in Stamford, Conn., agreed. "There's a difference between having a policy and having measures to make sure it's enforced consistently," he said. ◗

JUST THE FACTS

Health Sites

Internet Healthcare Coalition's proposed guidelines include:

- Get user's consent before gathering personal information
- Disclose financial arrangements that influence buying decisions
- State privacy policies
- Distinguish ads from health content

Fed CIOs Seek Higher Security Standards

Senate to examine agency security

BY PATRICK THIBODEAU
WASHINGTON

For Roger Baker, CIO at the Department of Commerce, the denial-of-service attacks that hit Yahoo Inc., eBay Inc. and others have given him a tool for improving his department's security practices. It's called leverage.

A few months ago, Baker said, be may have run into resistance if he asked, for instance, all the independent groups that make up the large federal agency to register their Web sites for an inventory to help with security.

"It's easy for me to do it now" because of the attacks three weeks ago, said Baker. "I don't even have to ask the secretary whether he would back that — it's clear to everybody that's what we have to do."

Federal agencies have received consistent criticism through the years from the U.S. General Accounting Office for their security management. It's the seemingly simple things that are often faulted in these reports: managers providing overly broad access privileges, employees sharing passwords and inadequate monitoring nf user access.

These lapses are "indicative nf a larger problem in government — that is, you don't have to make a profit, and there is essentially very little accountability," said Senate Governmental Affairs Chairman Fred Thnmpson (R-Tenn.). "We have to do a better job of cracking the whip at the top," said Thompson, who called a hearing Wednesday on security.

Hackers frequently probe government systems, according to federal officials, but aside from some Web site defacements, there have been no major, publicly reported security breaches. And government CIOs often stress that systems that protect confidential data are very secure.

The recent hacker attacks have prompted a renewed push by the White House tn make federal agencies role models for private industry. Officials are developing IT security best practices and performance measures.

But there is evidence that security worries may be hurting government's ability tn deliver personalized online services. Take the case nf the Social Security Administration.

In 1997, Social Security leaped into electronic service delivery by offering customers personalized benefit information online. The agency ended the cost-saving service in the face of criticism that it could be easily breached.

John Dyer, Social Security CIO, said the public puts "higher demands" on federal agencies tn safeguard data.

The agency has a less ambitious project planned. By year's end, it hopes to roll out a service that will let employers check online or via telephone whether a job candidate's Social Security number matches the name. The service's security features will include a password system and anomaly detection. ◗

JUST THE FACTS

Workforce Development

Federal officials proposed $25M in scholarships and training.

Scholarships: Award information security study scholarships in exchange for work with the federal government

IT excellence centers: Provide ongoing security training for federal employees

High school recruitment: Select students for summer work and internships

Linux Bundled with SAP, Oracle, CA Apps Draws Interest

BY DOMINIQUE DECKMYN

Red Hat Inc.'s Enterprise Edition bundling concept has struck a chord with users, and analysts said the idea may help Red Hat increase revenue and enter enterprise markets.

The Linux operating system is essentially free, and popular distributions often sell for less than $50, including printed documentation. "Selling the platform by itself is never going to make anyone rich," said Simon Yates, an analyst at Cambridge, Mass.-based Forrester Research Inc.

Red Hat last week launcbed four "enterprise editions" of its Red Hat Linux, bundled with either Computer Associates International Inc.'s Unicenter systems management software, Oracle Corp.'s Oracle8i, SAP AG's R/3 or RealNetworks Inc.'s RealSystem 7.0 media server software.

In eacb case, the operating system is configured to run the application and comes with a year of around-the-clock telephone support from Red Hat and the vendor partner. Pricing for the bundles will range from $999 to $3,500.

Stacey Quandt, an analyst at Giga Information Group Inc. in Santa Clara, Calif., said the concept may not appeal to current Linux users but could draw new customers.

But some Linux shops said if bundles save time in setting up a server, that's a big win. "I'm looking for a better SQL solution, because SQL Server 7 won't cut it," said Vince Bertone, MIS director at telecommunications equipment manufacturer Miteq Inc. in Hauppauge, N.Y. He said he likes the combination of Oracle and Red Hat and would buy a bundled, optimized combination "in a heartbeat" to replace his SQL Server on Windows NT.

Pascal Wattiaux, senior vice president of technologies at Web content provider Quokka Sports Inc. in San Francisco, said the bundle concept is less valuable for CA Unicenter, which, he said, is easy to set up. For software like SAP R/3, which Quokka doesn't currently use, "it would be a huge advantage," he said.

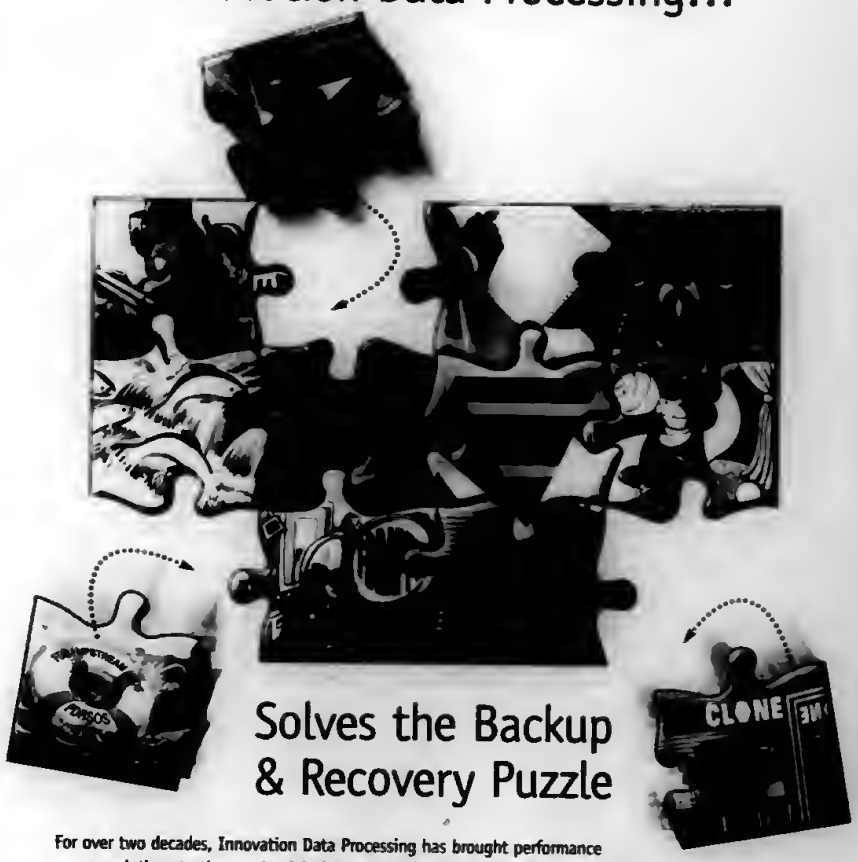
Red Hat Linux 6.1 Professional includes SSL security and 30-day configuration support. **$149.95**

Caldera OpenLinux eServer 2.3 includes the Webmin administration tool. **$199.95**

TurboLinux TurboCluster Server 4.0 offers clustering for more than 25 nodes. **$1,999.95**

Red Hat Linux Enterprise Edition includes the Oracle8i database. **$3,500.00**

Innovation Data Processing...



Solves the Backup & Recovery Puzzle

For over two decades, Innovation Data Processing has brought performance proven solutions to thousands of **OS/390 users.** As the complexity of enterprises grow, Innovation is keeping pace with the challenges of technology with unsurpassed reliability and unique storage management solutions.

Innovation products like **FDR InstantBackup** work with and enhance the latest revolutionary technology available from hardware vendors like EMC with TimeFinder™ and StorageTek™/IBM® with SnapShot Copy™. **FDRCLONE**, an option to ABR can reduce restore time by 80% at your disaster recovery site.

Innovative ideas...Shaping the Future of Storage Management...allow users virtual 24x7 availability to their data and...reliable and fast recovery onsite or at a disaster recovery location.

FDR® • FDRCLONE™ • ABR® • INSTANTBACKUP™ • FDREPORT • IAM® • FDRAPPL™ FATS®/FATAR™ • FDRSOS® • UPSTREAM® • FASTCPK • UPSTREAM/SOS® • FDRREORG®

Call 973-890-7300 now! Visit our website: www.innovationdp.fdr.com
FREE 90-Day No-Obligation Trial and FREE Puzzle T-shirt.

INNOVATION DATA PROCESSING

CORPORATE HEADQUARTERS: 275 Paterson Ave. Little Falls NJ 07424 • (973) 890-7300 • Fax (973) 890-7147
E-mail: support@fdrinnovation.com • sales@fdrinnovation.com • http://www.innovationdp.fdr.com

EUROPEAN OFFICES:	FRANCE 01-49-69-94-02	GERMANY 089-489-0210	NETHERLANDS 036-534-1660	UNITED KINGDOM 0208-905-1266	NORDIC COUNTRIES +31-36-534-1660

Microsoft Changes Policy for Contractors

BY LINDA ROSENCRANCE

In what it said was a response to lawsuits and a restructuring, Microsoft Corp. will soon require its long-term contract workers to take a 100-day hiatus — an increase from 31 days — after one year of full-time employment at the company.

The policy isn't groundbreaking — other high-tech firms already have such regulations — but some observers questioned Microsoft's motives. The policy will take effect July 1 and will force some 6,000 so-called "permatemps" to periodically find other work or seek permanent positions at the company.

Microsoft spokesman Dan Leacb said the company is sorry it had to take the step, knowing it will affect people who choose multiple assignments at the firm. "Our goal is to make sure we are turning to temporary staffing [in an appropriate manner]," said Leach.

AT A GLANCE

Permatemps

Microsoft's new policy for long-term, temporary employees:

- Beginning July 1, Microsoft's "permatemps" must take a 100-day hiatus after working 365 days
- Temporary workers will have to work elsewhere or seek regular employment at Microsoft

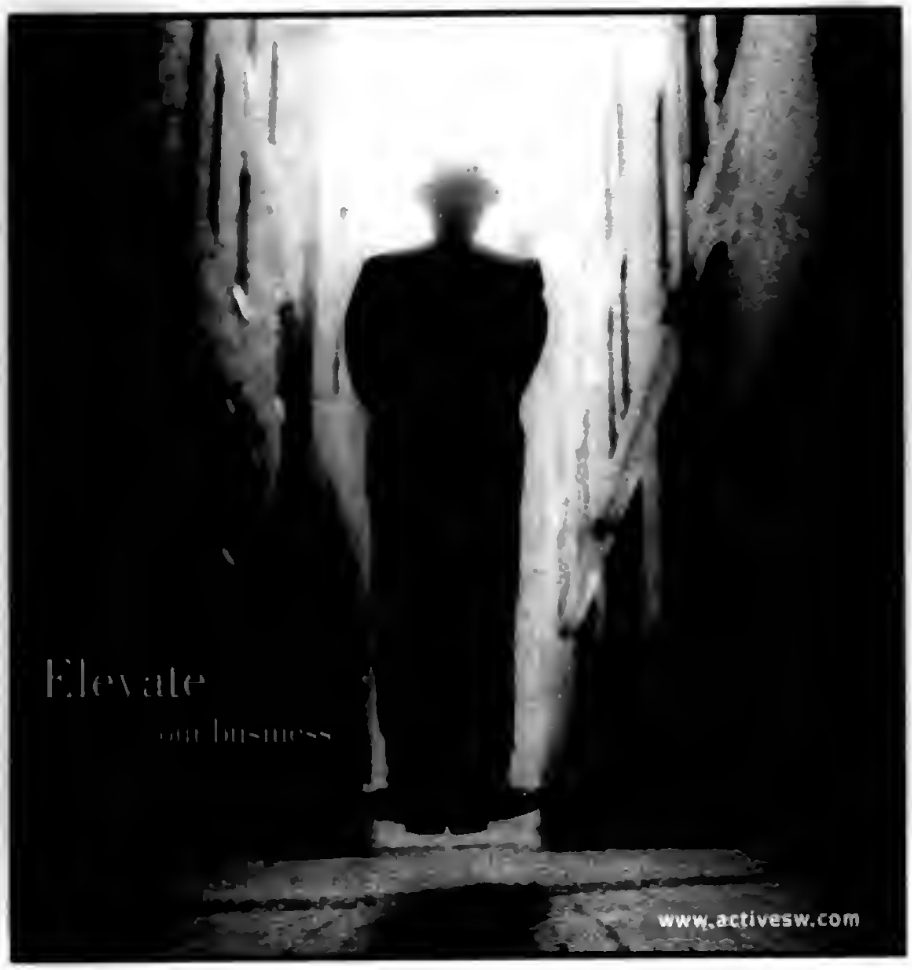
Microsoft lost one round of its battle with the permatemps last month, when the U.S. Supreme Court let stand a decision by the 9th U.S. Circuit Court of Appeals in San Francisco. The decision said Microsoft must open its discounted stock-purchase policy to as many as 10,000 temporary employees who had worked at the company for at least five months in any 12-month period.

Also pending is a ruling in a separate lawsuit, filed by Seattle-based law firm Bendich, Stobaugh & Strong in 1998, addressing temporary employees' eligibility for health and retirement benefits. Attorney Stephen Strong said he wasn't impressed with tbe new policy.

"It's unclear to me to whom this policy applies. But if [Microsoft] is taking long-term employees and firing them for 100 days to avoid paying full benefits, then it violates state and federal law," Strong said.

Mike Blain, a former Microsoft contract worker and co-founder of The Washington Alliance of Technology Workers, said the policy doesn't provide Microsoft workers witb any meaningful voice on the job. He said his organization will continue to organize contract workers and otber Microsoft employees.

Response is mixed, according to information posted on the alliance's Web site. While some permatemps say the move is good because it may force Microsoft to hire people on a regular full-time basis, others say Microsoft is using every legal loophole to avoid calling its workers "employees" and paying benefits.



Active

eBusiness Integration at the Speed of Change.

Active Software can help you become an eBusiness fast. By automating and accelerating your business processes, we'll elevate your business performance and put you in sync—in real time—with your employees, customers, suppliers, and B2B trading partners. And keep you there...no matter how fast it all changes. Active Software has helped more than 200 of the world's leading organizations accelerate time to market, reduce time to revenue, and rise above the competition through eBusiness integration.

FREE! Hurwitz Group eBusiness white paper!
Learn how to optimize your eBusiness opportunities by visiting www.activesw.com/elevate or call 888-251-4463 or 408-988-0414

GREAT PLAINS

Automakers Race After Alleged Cybersquatters

Ford, Nissan in domain name disputes

BY LEE COPELAND

FORD MOTOR CO. recently filed suit and won a temporary injunction against an alleged cybersquatter who Ford claims attempted to infringe upon its trademarks, in one of several Internet domain name disputes involving automakers.

Dearborn, Mich.-based Ford contends that Ohio resident Cory Czech attempted to sell 52 domain names, including Ford-quality.com and Lincoln-quality.com, on eBay Inc.'s auction Web site last month. The automaker won a temporary restraining order from the U.S. District Court in Northern Ohio to halt the domain name sales. Ford is also suing another individual to gain the rights to www.sporttruc.com, the name of a Ford utility vehicle.

Citing the federal Anti-Cybersquatting Consumer Protection Act passed last fall, Ford officials claim that by attempting to hawk the domain names on eBay, Czech meets the bad faith intent stipulated in the act. The act protects trademark holders from individuals who purchase domain names with bad faith intent.

Czech also holds domain names that include the trademarks of automakers such as General Motors Corp. in Detroit and DaimlerChrysler in Stuttgart, Germany.

Czech's attorney, Vince Ruffa of Oakar Ruffa and Abood in Broadview Heights, Ohio, declined to comment on the case.

Legal Battles Possible

GM spokeswoman Kelly Cusinato said she applauds Ford's "activism in protection of its trademarks." Cusinato said GM plans to investigate instances where it may be able to recover domains that use the company's trademarks.

Bob McAughan, a partner and intellectual property attorney at Howrey Simon Arnold & White LLP in Washington, said he expects the anticybersquatting law to help resolve domain name disputes quickly. But the law could also spark legal battles over Internet trademark issues where the interests of the parties aren't clear-cut.

One such case involves Nissan North America Inc. in Gardenia, Calif. In December, the company brought suit against an alleged cybersquatter to gain the rights to Nissan.com and Nissan.net. Unlike in typical cybersquatting cases, these domain names are registered to the owner of a business with a similar name: Uzi Nissan is president of Nissan Computer Corp. in Raleigh, N.C.

Uzi Nissan registered the names in 1994 for what he described as Internet service provider and computer reseller businesses. Officials for the automaker claim that the company's case meets the bad faith provision of the anticybersquatting act because Uzi Nissan offered to sell the domain name for $15 million.

But he contends that the high figure was offered in jest. "They want to crush me and get it for nothing. I feel that they are pressuring me to give it up," he said.

Ford Starts Firm to Manage Its Web Sites

Will serve as prime link to auto dealers

BY LEE COPELAND

In a deal dubbed a double-edged sword by one analyst, Ford Motor Co. last week launched a joint venture with Trilogy Software Inc. to create a separate firm to handle the automaker's Web-related business-to-business services.

The new venture will act as Ford's Web services company, operating all of the automaker's consumer Web sites and serving as the primary Web interface to more than 6,000 Ford dealers. The venture will use e-commerce software from Trilogy in Austin, Texas.

Officials said the still-unnamed company, to be located in Austin, should be operational within the next 30 days and have up to 300 employees by year's end. Dearborn, Mich.-based Ford has a majority stake in the venture.

Rob DeSisto, an analyst at Gartner Group Inc. in Stamford, Conn., said the venture could free Ford from maintaining Web services, a noncore business. Yet he questioned whether Trilogy could provide the best software to support the venture.

"This deal has to be put into perspective," he said. "Trilogy will provide most of the technology for them to be successful, but what Ford is really getting with Trilogy is some technology that has significant gaps in functionality relative to other competitors."

Configuration Competition

DeSisto said that Trilogy has failed to keep pace with competitors Selectica Inc. in San Jose and FirePond Inc. in Waltham, Mass., in terms of its configuration technology.

"[These companies] are focused on different parts of the market with simpler configuration problems. Trilogy continues to dominate the high end of the configuration market for large Fortune 500 companies," said Chris Porch, Trilogy co-founder and CEO of the new venture. "There is no e-commerce platform that does everything that a Fortune 500 company would need, but that is true for every vendor out there."

The venture will offer a range of services, including car configuration and buying, repairs, maintenance and possibly rental services. It will also pass sales leads to dealers.

"The big problem in the auto industry is disintermediation and channel conflict," said analyst Eric Schmitt at Forrester Research Inc. in Cambridge, Mass. "This nicely sidesteps that problem and places Ford in the role of a central organization that provides the technology to bring in dealers at the end of the line."

GM to Share IT Apps With Japanese Firms

BY LEE COPELAND

As part of an overall drive to streamline its information technology efforts, General Motors Corp. plans to share computer-based car development, design and engineering systems with the three Japanese automakers in which it holds equity investments, officials said.

Detroit-based GM holds stakes in several vehicle manufacturers in Japan, including Fuji Heavy Industries Ltd. in Tokyo, maker of the Subaru line of vehicles; Suzuki Motor Corp. in Hamamatsu; and Isuzu Motors Ltd. in Tokyo.

GM spokesman Patrick Morrissey said the company is in the initial stages of outlining a common design and engineering infrastructure with Fuji, Isuzu and Suzuki. He said that GM will evaluate high-end design systems and software from Unigraphics Solutions Inc. in Maryland Heights, Mo.

GM said that engineers on both continents will be able to access and share technical documents remotely once the system is in place.

System retooling is part of an overall GM initiative called Consistent Office Environment, which is aimed at streamlining computer systems and software to boost productivity and lessen training costs, officials said.

A common computing infrastructure for sharing development, design and engineering information could lead to significant cost savings and speed the deployment of new vehicle floor pans, analysts said.

"It makes a lot of sense, from an efficiency standpoint, for GM to share system design with [these Japanese automakers], because GM does own a percentage of those companies," said automotive analyst Brad Fox at AutoPacific Inc. in Tustin, Calif. "To the extent that they can be more efficient, the more profitable GM will be. As the leading automaker, GM gets criticized for not being more efficient in how it produces vehicles."

Fox said GM isn't as productive as its counterparts in Asia. "[GM is] not returning [on investments] as highly as they could. So they could stand to trim the fat," he said. Fox added that GM could also gain by sharing design systems with Fuji's Subaru division, which designs all-wheel-drive systems that GM hasn't yet been able to deploy in its passenger cars.

Suzuki Motor Corp. Hamamatsu, Japan	10%
Fuji Heavy Industries Ltd. Tokyo	20%
Isuzu Motors Ltd. Tokyo	49%
Saab AB Linkoping, Sweden	50%

GUARANTEED
QUALITY

TOTAL SERVICE

To: ZoneTrader.com customers
From: becki@zonetrader.com
Subject: Top Technology Brands

Every day, I track down the best in surplus and refurbished business technology for ZoneTrader.com: everything from hard drives and monitors to printers and servers. And only top-notch brands will do. You know what you want. It's my job to make sure you get it.

Always on the lookout,
Becki

ZoneTrader.com™

Real Solutions. Real Guarantee. Real People.

Wireless Meets Web

Wireless 2000 show draws heavyweights looking to get in on convergence action

BY MATT HAMBLEN

THE CELLULAR phone collides with the Web at Wireless 2000 in New Orleans this week.

The convergence of wireless communications and Web technology has rarely been the focus of such a big confab. Such notables as Microsoft Corp.'s Bill Gates will deliver keynote addresses to more than 20,000 cellular industry officials and information technology managers from companies that buy communications services and products.

TOM WHEELER: Convergence is happening with "a vengeance"

"We've been talking about this convergence coming, but it's come like a vengeance this year," said Tom Wheeler, president of the Cellular Telecommunications Industry Association in Washington, which sponsors the show.

"Everybody realizes that wireless and the Internet are the two hottest technologies," said Craig Mathias, a wireless analyst at The Farpoint Group in Ashland, Mass.

Technologies envisioned for 2002 and beyond would give mobile workers wireless access to corporate servers and vital data via smart phones, at speeds many times the current 9.6K bit/sec.

"The wireless data industry is in its very early stages, and that's why we're seeing a land-grab going on," with large companies saying they will produce wireless Internet products or services that they hope cellular carriers and hardware makers will provide to users, said analyst Mark Zohar at Forrester Research Inc. in Cambridge, Mass.

In addition to Gates, industry luminaries who will deliver keynotes include Jeff Bezos of Amazon.com Inc., Michael Capellas of Compaq Computer Corp. and Steve Case of America Online Inc.

Market Muscle

Analysts said the presence of such companies is more important than any product or service announcements they might plan to make because it shows the sheer muscle being exerted in the market.

For example, Microsoft is planning to announce wireless services in The Microsoft Network that mainly affect consumers, but the announcement is "nothing major," according to Zohar.

In preparation for the show, Oracle Corp. last week announced OracleMobile.com, a new subsidiary that will offer the first comprehensive consumer wireless Internet portal (see "Oracle Forms Unit to Launch Wireless Web Content Portal").

And Xerox Corp. in Palo Alto, Calif., last week announced MobileDoc, software that will give mobile workers the ability to control and distribute documents on a corporate server via a Motorola Corp. pager and eventually through Wireless Application Protocol phones.

Alan Reiter, an analyst at Wireless Internet and Mobile Computing, a consultancy in Chevy Chase, Md., said Proxicom, a Web design firm in Reston, Va., will be featured at a Wireless 2000 program because it's being asked by many large corporations to design

portions of their Web sites to make them accessible via wireless devices. Such designs call for fewer or no graphics and require fewer clicks to navigate through information, he said.

Pocket PC May Help Microsoft Gain Handheld Market Share

BY MATT HAMBLEN

Some analysts say they expect the new Pocket PC handheld operating system from Microsoft Corp., previewed at the CeBit show in Hannover, Germany, last week, will help cut into Palm Inc.'s 80% market share.

One of the biggest reasons for this prediction is that Pocket PC, the new name for the third-generation Windows CE operating system, will include a full Internet Explorer browser, analysts said.

"This third release [of Windows CE] is a charm," said Jill House, an analyst at International Data Corp. (IDC) in Framingham, Mass. She said the Internet Explorer browser will make it easier to access any Web site from a handheld device.

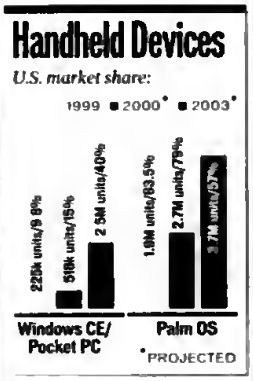
The full-functioning browser includes Secure Sockets Layer security protection, which could entice more corporate users to buy the machines for e-commerce uses, even though the devices will be popular with consumers as well, analysts said.

Also, the design of the new Pocket PC is "sleeker," the device is easier to handle and the buttons are simpler to use, said House, basing her opinion on prototypes she has seen that haveo't been made public.

The Competition

Analysts at IDC and Mobile Insights Inc. in Mountain View, Calif., said they believe the Pocket PC will help Microsoft gain market share from 3Com Corp.'s Palm Inc. in the next three years.

IDC said Palm held 83.5% of the handheld market in the U.S. last year, compared with 9.8% for Windows CE. In 2003, Pocket PC will have 40%, compared with 57% for Palm, IDC predicts (see chart).



The five largest companies building Pocket PC machines are Hewlett-Packard Co., Casio Inc. in Dover, N.J., Compaq Computer Corp., Symbol Technologies Inc. in Holtsville, N.Y., and Siemens Communications Devices, a division of Germany's Siemens AG.

Microsoft expects to release Pocket PC in the spring; some analysts specified April.

Oracle Forms Unit to Launch Wireless Web Content Portal

Subsidiary to target consumers now, businesses later

BY CHRISTINE McGEEVER

Enterprise database powerhouse Oracle Corp. wants to be the company consumers use to order pizzas over the Internet from their cell phones.

Oracle last week announced that it had formed a subsidiary called OracleMobile.com and had signed business agreements with 21 consumer-oriented content providers to populate Oramobile.com, a new Internet portal.

"We're not providing the content. We're bringing content to any device that has access to the Internet," said Denise Lahey, president and CEO of OracleMobile.com. The portal, which is operating now, can be accessed from Web-enabled wireless devices such as Web phones and two-way pagers. It enables users to get stock quotes, make flight reservations, access oews, check movie listings and bandle other "lifestyle activities" — as Oracle calls such tasks.

Oracle has chosen a rocky time in the life of Internet e-commerce to pursue consumer markets. A report by Forrester Research Inc. in Cambridge Mass., asserts that the overall e-commerce market will consolidate, with the consumer segment being the hardest hit.'

Lahey said OracleMobile.com will also launch busioess-to-business wireless portals.

The portal currently supports only text-based access. An agreement with Motorola Inc., also announced last week, will eventually result in the addition of voice-recognition capabilities to the portal, but Oracle didn't say when voice recognition will be available.

Increased Demand

Wireless Web access is growing: The Telecommunications Industry Association reported that spending on wireless communications equipment totaled $57.7 billion last year, up 17.4% from 1998. The association predicts that wireless spending will reach $86 billion by 2003.

But tbe keypad-based design of phones and pagers may be a barrier to eonsumer acceptance. Greg Phillips, cofounder of Informative Inc., a business intelligence compaoy in South San Francisco, Calif., said pager-based short messaging is an example of a useful application hampered by a keypad interface. But he said OracleMobile has choseo some high-profile consumer sites that may overcome that disadvantage.

Wireless Meets Web

Wireless 2000 show draws heavyweights looking to get in on convergence action

BY MATT HAMBLEN

THE CELLULAR phone collides with the Web at Wireless 2000 in New Orleans this week.

The convergence of wireless communications and Web technology has rarely been the focus of such a big confab. Such notables as Microsoft Corp.'s Bill Gates will deliver keynote addresses to more than 20,000 cellular industry officials and information technology managers from companies that buy communications services and products.

"We've been talking about this convergence coming, but it's come like a vengeance this year," said Tom Wheeler, president of the Cellular Telecommunications Industry Association in Washington, which sponsors the show.

"Everybody realizes that wireless and the Internet are the two hottest technologies," said Craig Mathias, a wireless analyst at The Farpoint Group in Ashland, Mass.

TOM WHEELER: Convergence is happening with "a vengeance"

Technologies envisioned for 2002 and beyond would give mobile workers wireless access to corporate servers and vital data via smart phones, at speeds many times the current 9.6K bit/sec.

"The wireless data industry is in its very early stages, and that's why we're seeing a land-grab going on," with large companies saying they will produce wireless Internet products or services that they hope cellular carriers and hardware makers will provide to users, said analyst Mark Zohar at Forrester Research Inc. in Cambridge, Mass.

In addition to Gates, industry luminaries who will deliver keynotes include Jeff Bezos of Amazon.com Inc., Michael Capellas of Compaq Computer Corp. and Steve Case of America Online Inc.

Market Muscle

Analysts said the presence of such companies is more important than any product or service announcements they might plan to make because it shows the sheer muscle being exerted in the market.

For example, Microsoft is planning to announce wireless services in The Microsoft Network that mainly affect consumers, but the announcement is "nothing major," according to Zohar.

In preparation for the show, Oracle Corp. last week announced OracleMobile.com, a new subsidiary that will offer the first comprehensive consumer wireless Internet portal (see "Oracle Forms Unit to Launch Wireless Web Content Portal").

And Xerox Corp. in Palo Alto, Calif., last week announced MobileDoc, software that will give mobile workers the ability to control and distribute documents on a corporate server via a Motorola Corp. pager and eventually through Wireless Application Protocol phones.

Alan Reiter, an analyst at Wireless Internet and Mobile Computing, a consultancy in Chevy Chase, Md., said Proxicom, a Web design firm in Reston, Va., will be featured at a Wireless 2000 program because it's being asked by many large corporations to design

portions of their Web sites to make them accessible via wireless devices. Such designs call for fewer or no graphics and require fewer clicks to navigate through information, he said.

Pocket PC May Help Microsoft Gain Handheld Market Share

BY MATT HAMBLEN

Some analysts say they expect the new Pocket PC handheld operating system from Microsoft Corp., previewed at the CeBit show in Hannover, Germany, last week, will help cut into Palm Inc.'s 80% market share.

One of the biggest reasons for this prediction is that Pocket PC, the new name for the third-generation Windows CE operating system, will include a full Internet Explorer browser, analysts said.

"This third release [of Windows CE] is a charm," said Jill House, an analyst at International Data Corp. (IDC) in Framingham, Mass. She said the Internet Explorer browser will make it easier to access any Web site from a handheld device.

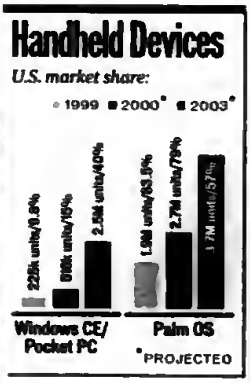
The full-functioning browser includes Secure Sockets Layer security protection, which could entice more corporate users to buy the machines for e-commerce uses, even though the devices will be popular with consumers as well, analysts said.

Also, the design of the new Pocket PC is "sleeker," the device is easier to handle and the buttons are simpler to use, said House, basing her opinion on prototypes she has seen that haven't been made public.

The Competition

Analysts at IDC and Mobile Insights Inc. in Mountain View, Calif., said they believe the Pocket PC will help Microsoft gain market share from 3Com Corp.'s Palm Inc. in the next three years.

IDC said Palm held 83.5% of the handheld market in the U.S. last year, compared with 9.8% for Windows CE. In 2003, Pocket PC will have 40%, compared with 57% for Palm, IDC predicts (see chart).



The five largest companies building Pocket PC machines are Hewlett-Packard Co., Casio Inc. in Dover, N.J., Compaq Computer Corp., Symbol Technologies Inc. in Holtsville, N.Y., and Siemens Communications Devices, a division of Germany's Siemens AG.

Microsoft expects to release Pocket PC in the spring; some analysts specified April.

Oracle Forms Unit to Launch Wireless Web Content Portal

Subsidiary to target consumers now, businesses later

BY CHRISTINE McGEEVER

Enterprise database powerhouse Oracle Corp. wants to be the company consumers use to order pizzas over the Internet from their cell phones.

Oracle last week announced that it had formed a subsidiary called OracleMobile.com and had signed business agreements with 21 consumer-oriented content providers to populate Oramobile.com, a new Internet portal.

"We're not providing the content. We're bringing content to any device that has access to the Internet," said Denise Lahey, president and CEO of OracleMobile.com. The portal, which is operating now, can be accessed from Web-enabled wireless devices such as Web phones and two-way pagers. It enables users to get stock quotes, make flight reservations, access news, check movie listings and handle other "lifestyle activities" — as Oracle calls such tasks.

Oracle has chosen a rocky time in the life of Internet e-commerce to pursue consumer markets. A report by Forrester Research Inc. in Cambridge Mass., asserts that the overall e-commerce market will consolidate, with the consumer segment being the hardest hit.

Lahey said OracleMobile.com will also launch business-to-business wireless portals.

The portal currently supports only text-based access. An agreement with Motorola Inc., also announced last week, will eventually result in the addition of voice-recognition capabilities to the portal, but Oracle didn't say when voice recognition will be available.

Increased Demand

Wireless Web access is growing: The Telecommunications Industry Association reported that spending on wireless communications equipment totaled $57.7 billion last year, up 17.4% from 1998. The association predicts that wireless spending will reach $86 billion by 2003.

But the keypad-based design of phones and pagers may be a barrier to consumer acceptance. Greg Phillips, co-founder of Informative Inc., a business intelligence company in South San Francisco, Calif., said pager-based short messaging is an example of a useful application hampered by a keypad interface. But he said OracleMobile has chosen some high-profile consumer sites that may overcome that disadvantage.

THE ANTI-SWEATY PALMS, DRY MOUTH, DIZZY SPELL, SO-YOU-CAN-SLEEP E-BIZ SOLUTION.

(NOW IN PRESCRIPTION STRENGTH.)

Micronpc.com's e-commerce solution relieves all of your major e-commerce headaches with one dedicated point of contact. You'll find the maximum level of active ingredients to put your e-business structure in place (or maintain a pre-existing one), from the #1-rated Web-hosting service for outsourcing your website, to award-winning hardware (like the 1U Micron NetFRAME 4400R), for running your website in-house. And as the third largest provider of Web-hosting services in the U.S., we'll give you the scalability and redundancy to accommodate rapid changes in your e-business. For the relief you need, call, or visit micronpc.com/Rx4 today. Warning: Highly customized, intensely individual attention of this nature has been shown to cause temporary giddiness.

1-800-554-5238 • WWW.MICRONPC.COM/Rx4

micronpc.com Think beyond the box.™

intel inside
pentium® III

*Rated by Web Host Directory's independent panel and website visitors. Intel, the Intel Inside logo and Pentium III are registered trademarks of Intel Corporation. micronpc.com and Think beyond the box are trademarks of Micron Electronics, Inc. Product names of micronpc.com products are trademarks or registered trademarks of Micron Electronics, Inc. ©2000 Micron Electronics, Inc. All rights reserved.

BRIEFS

Wireless at CeBit

Bluetooth products demonstrated at CeBit 2000 in Hannover, Germany, last week included handheld computers from Palm Inc. in Santa Clara, Calif. Those devices link wirelessly to PCs and other Palms as well as NEC Corp. laptops that link to one another using Bluetooth chips. Bluetooth is a short-range radio technology that's designed to replace cables for device connections.

Kraft Adopts Ariba

Northfield, Ill.-based Kraft Foods Inc. signed on to use Mountain View, Calif-based Ariba Inc.'s business-to-business e-commerce and procurement software. The companies said Kraft plans to use the Internet-based procurement application across its supply chain.

AOL Hires FCC Chief

America Online Inc. has named Dennis Patrick, former commissioner and chairman of the Federal Communications Commission (FCC), as president of its wireless division. Patrick, who served at the FCC during the 1980s, will oversee AOL's wireless strategy and operations.

XML B-to-B Platform

Extricity Software Inc. in Redwood Shores, Calif., announced a new XML-based software platform for creating business-to-business Internet trading communities. The vendor also said that three customers have signed up for its new Alliance for Net Markets software: MarketFusion Inc. in San Jose, Need2Buy.com Inc. in Westlake Village, Calif., and RightFreight.com in New York.

Short Takes

INTELISYS ELECTRONIC COMMERCE INC. in New York and XTRA ON-LINE CORP. in Dallas signed a deal that will give users of Intelisys' Internet-based purchasing software desktop access to travel planning and management software from On-Line's PowerTrip.com. . . . MICROSOFT CORP.'s Windows Millennium Edition, the next version of Consumer Windows, will ship with built-in help desk software from SUPPORT.COM INC. in Redwood City, Calif.

Survey: Manufacturers Stalled by B-to-B's Cost

That plus complexity of building secure system keeps 70% of respondents off-line

BY JAIKUMAR VIJAYAN

THE COMPLEXITY and cost of building a secure business-to-business e-commerce infrastructure is slowing adoption of Internet technology in most manufacturing firms, according to a recent survey. But few are surprised.

The nationwide poll of American industrial firms revealed that nearly seven out of 10 U.S. manufacturers aren't using e-commerce as a medium for business transactions.

The survey of 250 companies was completed earlier this month by the Washington-based National Association of Manufacturers, which represents more than 14,000 manufacturing companies.

Sixty-eight percent of the respondents said their companies aren't doing transactions over the Internet. And though 80% claimed to have a Web site, the vast majority offer only an information storefront with no transactional capabilities or links to back-end systems.

The survey also found that there was little consistency about who is accountable for business-to-business e-commerce ventures within companies. While 35% said their CEO or senior management personnel were in charge, 22% claimed the responsibility rested with IT personnel, and 10% acknowledged that no one was in charge.

Implementation Gap

"No one questions the importance of B-to-B e-commerce, yet relatively few manufacturers are participating in it," said National Manufacturers Association President Jerry Jasinowski in a statement.

The survey "shows a wide disparity between the recognition by business that the Internet is a vital new form of commerce and the actual application of that knowledge by American industry," he said.

"I'm not surprised at all by these numbers," said Andy Chatha, president of ARC Advisory Group Inc., a consultancy in Dedham, Mass.

E-commerce for manufacturing is extremely complex because of the many purchase combinations and configurations involved in business-to-business transactions, said Dave Krauthamer, director of information technologies at Advanced Fibre Communications Inc., a Petaluma, Calif., manufacturer of telecommunications equipment.

For example, while it is relatively simple to accommodate online purchases of single components and parts, it becomes far more complex to do the same with orders that require custom configurations, he said. "It's not like a shopping-basket scenario where you purchase single discrete items," he added.

"B-to-B is a lot more complex," agreed Chatha. "Most [manufacturing companies] are just getting ready here. . . . They have to build their infrastructure, and much of the technology is still in its infancy."

What appears to be holding back many companies are uncertainties related to costs and security, said Jo-Anne Prokopowicz, an association spokeswoman. Of those surveyed, more than 50% cited cost concerns as a factor, while 45% said security is a concern, she said.

"Those who have decided to go after a B-to-B [strategy] are still figuring out how to take advantage of it," said Bill McSpadden, an analyst at Plant-Wide Research Group in North Billerica, Mass.

"Some believe there is a significant [financial] risk involved, while others are simply not sure how to proceed," he said. ▶

Webified Manufacturing

How manufacturing companies are using the Internet:

23% To display product catalogs and new product information

17% To comparison shop

17% To replace electronic data interchange

12% To buy materials, parts or shipping services

SOURCE: THE NATIONAL ASSOCIATION OF MANUFACTURERS, WASHINGTON, D.C.

Continued from page 1

Logistics

Participants in the new initiative include Wal-Mart Stores Inc. in Bentonville, Ark., Procter & Gamble Co. in Cincinnati, and J. B. Hunt Transport Services Inc. in Lowell, Ark., said Andrew White, a vice president at Logility Inc. Logility, an Atlanta-based software vendor, is also involved in the new group.

White said the group has yet to set a schedule for releasing any collaboration guidelines. But it plans to publicize its efforts at a VICS conference in Chicago in April, he said.

Simultaneously, vendors are starting to roll out Internet-based applications that are supposed to make collaborative warehouse and transportation management a reality.

For example, both Logility and San Francisco-based Qiva Inc. this week plan to release software that lets manufacturers and freight carriers interact via the Web to book, schedule and track shipments.

And McHugh Software International, a Waukesha, Wis.-based vendor that shipped a similar product last fall to tie manufacturers to carriers, is expected to announce plans next month to expand its software to support manufacturing subcontractors and third-party warehousing firms.

MSAS Global Logistics, a U.K.-based freight carrier, and four other European shipping companies have jointly signed up to use Qiva's software to share truck shipment data.

The companies are rivals, but they often handle different legs of a shipment, said Andre Haket, an information technology director at MSAS. And manufacturers want to be able to track goods through the entire supply chain, he added.

"We're not on our own anymore," Haket said. "We all have a piece of the jigsaw puzzle, but it's important that we know about all of the information."

But collaboration isn't easy, Haket warned: It took the five companies nearly 18 months to agree to work together and then to iron out the details.

John Fontanella, an analyst at AMR Research Inc. in Boston, said transportation management is still a manual job for many users. Using the Web to coordinate shipments could help freight carriers do a better job of making sure they have trucks ready when manufacturers need them, he said.

Wickes Furniture Inc., a furniture retailer in Wheeling, Ill., hopes to use Logility's new software and a companion collaborative planning application to reduce delivery times and improve customer service in its stores.

Being able to tell buyers when an item will arrive from a manufacturer's warehouse "is our ultimate goal," said Ken Maher, a vice president at Wickes. It plans to follow the guidelines set by VICS to help make that happen, he said. ▶

JUST THE FACTS

Supply-Chain Collaboration

VICS: Voluntary Interindustry Commerce Standards Association (VICS) – a group of manufacturers, retailers, shipping companies and software vendors that develops standards

CPFR: Collaborative Planning, Forecasting and Replenishment – a VICS committee with published guidelines for forecasting demand and planning production

CTM: Collaborative Transportation Management – a new group within VICS that defines guidelines for supply-chain execution

BRIEFS

Wireless at CeBit

Bluetooth products demonstrated at CeBit 2000 in Hannover, Germany, last week included handheld computers from Palm Inc. in Santa Clara, Calif. Those devices link wirelessly to PCs and other Palms as well as NEC Corp. laptops that link to one another using Bluetooth chips. Bluetooth is a short-range radio technology that's designed to replace cables for device connections.

Kraft Adopts Ariba

Northfield, Ill.-based Kraft Foods Inc. signed on to use Mountain View, Calif.-based Ariba Inc.'s business-to-business e-commerce and procurement software. The companies said Kraft plans to use the Internet-based procurement application across its supply chain.

AOL Hires FCC Chief

America Online Inc. has named Dennis Patrick, former commissioner and chairman of the Federal Communications Commission (FCC), as president of its wireless division. Patrick, who served at the FCC during the 1980s, will oversee AOL's wireless strategy and operations.

XML B-to-B Platform

Extricity Software Inc. in Redwood Shores, Calif., announced a new XML-based software platform for creating business-to-business Internet trading communities. The vendor also said that three customers have signed up for its new Alliance for Net Markets software: MarketFusion Inc. in San Jose, Need2Buy.com Inc. in Westlake Village, Calif., and RightFreight.com in New York.

Short Takes

INTELISYS ELECTRONIC COMMERCE INC. in New York and XTRA ON-LINE CORP. in Online signed a deal that will give users of Intelisys' Internet-based purchasing software desktop access to travel planning and management software from On-Line'a PowerTrip.com. . . . MICROSOFT CORP.'s Windows Millennium Edition, the next version of Consumer Windows, will ship with built-in help desk software from SUPPORT.COM INC. in Redwood City, Calif.

Survey: Manufacturers Stalled by B-to-B's Cost

That plus complexity of building secure system keeps 70% of respondents off-line

BY JAIKUMAR VIJAYAN

THE COMPLEXITY and cost of building a secure business-to-business e-commerce infrastructure is slowing adoption of Internet technology in most manufacturing firms, according to a recent survey. But few are surprised.

The nationwide poll of American industrial firms revealed that nearly seven out of 10 U.S. manufacturers aren't using e-commerce as a medium for business transactions.

The survey of 250 companies was completed earlier this month by the Washington-based National Association of Manufacturers, which represents more than 14,000 manufacturing companies.

Sixty-eight percent of the respondents said their companies aren't doing transactions over the Internet. And though 80% claimed to have a Web site, the vast majority offer only an information storefront with no transactional capabilities or links to back-end systems.

The survey also found that there was little consistency about who is accountable for business-to-business e-commerce ventures within companies. While 35% said their CEO or senior management personnel were in charge, 22% claimed the responsibility rested with IT personnel, and 10% acknowledged that no one was in charge.

Implementation Gap

"No one questions the importance of B-to-B e-commerce, yet relatively few manufacturers are participating in it," said National Manufacturers Association President Jerry Jasinowski in a statement.

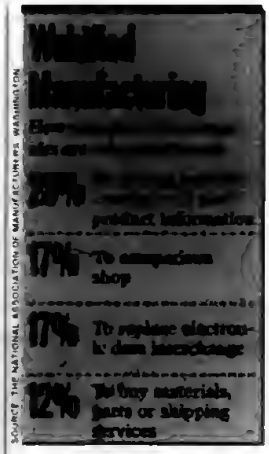
The survey "shows a wide disparity between the recognition by business that the Internet is a vital new form of commerce and the actual application of that knowledge by American industry," he said.

"I'm not surprised at all by these numbers," said Andy Chatha, president of ARC Advisory Group Inc., a consultancy in Dedham, Mass.

E-commerce for manufacturing is extremely complex because of the many purchase combinations and configurations involved in business-to-business transactions, said Dave Krauthamer, director of information technologies at Advanced Fibre Communications Inc., a Petaluma, Calif., manufacturer of telecommunications equipment.

For example, while it is relatively simple to accommodate online purchases of single components and parts, it becomes far more complex to do the same with orders that require custom configurations, he said. "It's not like a shopping-basket scenario where you purchase single discrete items," he added.

"B-to-B is a lot more complex," agreed Chatha. "Most [manufacturing companies] are just getting ready here. . . . They have to build their infrastructure, and much of the technology is still in its infancy."



What appears to be holding back many companies are uncertainties related to costs and security, said Jo-Anne Prokopowicz, an association spokeswoman. Of those surveyed, more than 50% cited cost concerns as a factor, while 45% said security is a concern, she said.

"Those who have decided to go after a B-to-B [strategy] are still figuring out how to take advantage of it," said Bill McSpadden, an analyst at Plant-Wide Research Group in North Billerica, Mass.

"Some believe there is a significant [financial] risk involved, while others are simply not sure how to proceed," he said.

Continued from page 1

Logistics

Participants in the new initiative include Wal-Mart Stores Inc. in Bentonville, Ark., Procter & Gamble Co. in Cincinnati, and J. B. Hunt Transport Services Inc. in Lowell, Ark., said Andrew White, a vice president at Logility Inc. Logility, an Atlanta-based software vendor, is also involved in the new group.

White said the group has yet to set a schedule for releasing any collaboration guidelines. But it plans to publicize its efforts at a VICS conference in Chicago in April, he said.

Simultaneously, vendors are starting to roll out Internet-based applications that are supposed to make collaborative warehouse and transportation management a reality.

For example, both Logility and San Francisco-based Qiva Inc. this week plan to release software that lets manufacturers and freight carriers interact via the Web to book, schedule and track shipments.

And McHugh Software International, a Waukesha, Wis.-based vendor that shipped a similar product last fall to tie manufacturers to carriers, is expected to announce plans next month to expand its software to support manufacturing subcontractors and third-party warehousing firms.

MSAS Global Logistics, a U.K.-based freight carrier, and four other European shipping companies have jointly signed up to use Qiva'a software to share truck shipment data.

The companies are rivals, but they often handle different legs of a shipment, said Andre Haket, an information technology director at MSAS. And manufacturers want to be able to track goods through the entire supply chain, he added.

"We're not on our own anymore," Haket said. "We all have a piece of the jigsaw puzzle, but it's important that we know about all of the information."

But collaboration isn't easy, Haket warned: It took the five companies nearly 18 months to agree to work together and then to iron out the details.

John Fontanella, an analyst at AMR Research Inc. in Boston, said transportation management is still a manual job for many users. Using the Web to coordinate shipments could help freight carriers do a better job of making sure they have trucks ready when manufacturers need them, he said.

Wickes Furniture Inc., a furniture retailer in Wheeling, Ill., hopes to use Logility'a new software and a companion collaborative planning application to reduce delivery times and improve customer service in its stores.

Being able to tell buyers when an item will arrive from a manufacturer's warehouse "is our ultimate goal," said Ken Maher, a vice president at Wickes. It plans to follow the guidelines set by VICS to help make that happen, he said.

JUST THE FACTS

Supply-Chain Collaboration

VICS: Voluntary Interndustry Commerce Standards Association (VICS) – a group of manufacturers, retailers, shipping companies and software vendors that develops standards

CPFR: Collaborative Planning, Forecasting and Replenishment – a VICS committee with published guidelines for forecasting demand and planning production

CTM: Collaborative Transportation Management – a new group within VICS that defines guidelines for supply-chain execution

They say don't just push the envelope. Blow it away.

That's how the world's most competitive companies describe the awesome power of Citrix® MetaFrame™ for Microsoft® Windows® 2000 Servers. Full-throttle performance for the digital economy. Freedom to launch any application on any device over any connection—wireless to Web. And the ability to deploy business-critical applications anywhere via the Internet. While extending Terminal Services to everything from legacy PCs to the hottest information devices. We call it Digital Independence™. You'll call it extraordinary. Learn how with your MetaFrame information kit at **www.citrix.com/blownaway** or **888.415.4307**.

CITRIX
Digital Independence

© 1990–2000 Citrix Systems, Inc. All rights reserved. Citrix® is a registered trademark and MetaFrame,™ Digital Independence™ and "Now everything computes™" are trademarks of Citrix Systems, Inc. All other trademarks and registered trademarks are property of their respective owners.

Now everything computes.™

CITRIX

Quick, Who Offers The Best Tools For DB2?

Computer Associates. That's who.

CA is one of the industry's leading vendors of tools for DB2 for OS/390, and is a true, one-stop shop for all of your IT needs. CA has a broad range of solutions that enable you to manage your applications and maximize the return on your DB2 investment in Performance Management and Analysis, Database Administration, Data Availability, Backup and Recovery, and Application Development.

CA provides proven solutions for DB2, that will ensure successful implementation and management of all of your business-critical applications, including third-party ERP applications running on DB2 for OS/390.

Solutions for DB2 for OS/390

REDUCE COSTS		GAIN COMPETITIVE ADVANTAGE		PROVIDE PROACTIVE MANAGEMENT
Database Administration	**Data Availability**	**Backup and Recovery**	**Application Development**	**Performance Management**
Streamline administration tasks	Reduce or eliminate downtime	Keep data secure and reliable	Accelerate development cycles	Monitor critical resources
Concurrently manage multiple databases	Perform online reorganization	Recover specific objects or entire databases	Integrate legacy data with new applications	Improve data retrieval
Alter and migrate database objects	Quickly load and unload data	Maintain business profitability	Generate error-free SQL code	Optimize database tuning efforts

CA Solutions for DB2 for OS/390 give you complete control of your mission-critical information

CA recently completed its portfolio of DBA tools by adding IMS database solutions to its product portfolio. Don't be held hostage by other tool vendors when CA can offer a single vendor solution across a multiple database environment, complete with an aggressive value proposition, and conversion services. Just send an e-mail to rescueprogram@cai.com for information on CA's Rescue Program and your no obligation product conversion analysis.

CA Rescue Program

And remember, when you think DB2, think CA.

CA Solutions for DB2 for OS/390

For more information, call 1-800-850-7528 Ext. 100, or visit our website at www.cai.com

COMPUTER® ASSOCIATES
Software superior by design.

© 1999 Computer Associates International Inc Islandia NY 11749 All product names referenced herein are trademarks of their respective companies

Judge's Pointed Queries to Microsoft Buoy DOJ Hopes

Court makes comparison to Standard Oil antitrust case; verdict may come soon

BY PATRICK THIBODEAU
WASHINGTON

With closing arguments in the Microsoft Corp. antitrust trial over, it's now up to Judge Thomas Penfield Jackson to issue a verdict. And he did little last week to dispel the expectation that he will come down hard on the software giant.

Jackson asked numerous questions of both sides but was particularly tough on Microsoft. Government attorneys are clearly anticipating a strong verdict in their favor and say they plan to ask for severe sanctions.

"Remedies have to be drastic and far-reaching, because the findings of this conduct and predatory practices are so serious and significant," said Attorney General Richard Blumenthal of Connecticut, one of 19 states that brought the case against Microsoft.

Jackson may move quickly to issue a verdict. He has kept the trial on a fast track, limiting witnesses to speed the process. He released his more than 200-page findings of fact in November, less than two months after attorneys completed the first set of closing arguments.

GOVERNMENT ATTORNEY David Boies (left) said Microsoft is violating antitrust laws, while Microsoft attorney John Warden said a decision against the company could hurt the economy

Most telling about what the future may hold for Microsoft came when the judge compared the company's power over its operating system with the power John D. Rockefeller once had over oil, citing the famous 1911 Standard Oil case. The courts decided to break up Standard Oil, and attorneys for the government are considering the same remedy for Microsoft.

"Mr. Rockefeller had fee simple control over his oil," said Jackson, using a term that describes complete or unlimited control over property. "I don't see the distinction."

The judge's mention of the Standard Oil case underscored government arguments that antitrust laws developed to handle manufacturing also apply to so-called new-economy companies.

David Boies, the lead government attorney, offered a litany of antitrust violations against Microsoft, such as making inducements and threats to competitors. He assured Jackson that a verdict against Microsoft would pass the ultimate legal test.

"Try to imagine the U.S. Supreme Court ruling that these cases do not violate the antitrust laws," Boies said to the judge. "It's impossible to imagine."

But while John Warden, Microsoft's chief trial attorney, argued that Microsoft didn't violate any law, he also said the industry has rapidly changed since this case was brought, and he warned that the wrong decision could endanger U.S economic prosperity.

"The success of this industry . . . is by common acknowledgment the engine that has driven the nation's unprecedented economic expansion," Warden said.

Arguments Questioned

Jackson appeared particularly critical of Microsoft's legal arguments that copyright law gives it control over how PC makers can use the Windows operating system, telling Warden that he had problems with the company's arguments.

But Jackson questioned the government about its claim that Microsoft illegally tied its browser to its operating system. A 1998 appeals court ruling said Microsoft could legally integrate its browser with its operating system.

"The questions to Boies have their own troubling qualities for the government," said George Washington University law professor William Kovacic.

Neither side would offer any details about the ongoing settlement talks, but sources close to the talks aren't optimistic that a settlement will be reached.

In Review

Highlights of the Microsoft antitrust investigation:

1993
Department of Justice (DOJ) starts investigating Microsoft for anticompetitive practices

1994
DOJ, Microsoft sign consent decree outlawing restrictive licenses with PC makers

1995
Judge Thomas Penfield Jackson approves consent decree

1998
DOJ investigates Microsoft for allegations of consent decree violations

1997
Jackson issues preliminary injunction requiring Microsoft to unbundle Internet Explorer from Windows 95

1998
- **January:** Microsoft signs agreement allowing licensees to install Windows 95 without Internet Explorer desktop icon
- **May:** Appellate court rules that injunction doesn't apply to Windows 98; DOJ and 20 states slap Microsoft with antitrust suit
- **June:** Appellate court overturns Windows 95 preliminary injunction
- **October:** Trial begins

1999
- **September:** First set of closing arguments presented to Jackson
- **November:** Jackson issues "findings of fact" in case

2000
February 23: Sides give final arguments

Staffing Woes Spur ASP Use

Application helps IT manage outsourcing

BY MARK HALL

The information technology talent crunch has increased the pressure on CIOs to use more outside professional services. Managing those services has become yet another challenge.

According to a study conducted by Stamford, Conn.-based Gartner Group Inc., growth in IT professional services will more than double between 1998 and 2003 in every category — from data center operations to help desk functions.

Gartner also concluded that outsourcing even senior-level responsibilities, such as IT planning and management, will double during the same period. By 2002, the researcher said, as much as 50% of all IT operations for $1 billion and larger enterprises will be handled by contract workers.

At Limited Technology Services, a wholly owned subsidiary of The Limited Inc., a $10 billion retailer based in Columbus, Ohio, recruiting, retaining and developing employees is the No. 1 IT problem. Group CIO Tom McFadden said he employs outside consultants for specific projects "and to fill skills gaps." He uses a variety of professional service providers, depending on his needs

Outsourcing Application

To manage contractors, McFadden turned to application service provider MirrooeX Technologies Inc. in Princeton, N.J.

The company's mxConnect online application lets McFadden have a single view of the status of all his outside professional resources. He can look at time and attendance records, expenses, worker performance and billing details.

When The Limited oeeds new resources, his staff submits a requisition to MirroneX, and the software automatically forwards approved requests to all outsourcing providers. Because they're in a competitive bidding situation, his taleot suppliers are much more responsive, McFadden said. In addition, no matter how many agencies he uses, he gets only one invoice.

RHI Consulting Inc. in Menlo Park, Calif., which specializes in IT contract professionals, hasn't done business with an application service provider like MirroneX, according to company spokesman Joel Dibble. "But the staffing industry is moving in that direction," he said. Dibble said RHI has encountered clients that automate their own consultant management operations through portals or extranets.

Despite the difficulties in hiring IT staff, some companies resist using outside contractors. Tom Sikyta, senior director of technical services at Carlson Hospitality Worldwide, a global hotel and cruise business based in Omaha, said he tries to avoid using outside help.

"I think the value of consultants is that they can get you into a technology real quickly," Sikyta said. "But long term, they're expensive."

#1 in data warehousing and business intelligence

SAS Institute

arehouse 100 is the
ined by real customers.
. Clearly, they found the
ute—rated #1 in data
s intelligence. Now it's

d request a free CD,
as.com/one or
200.

SAS Institute

Copyright © 2000 by SAS Institute Inc. 20400_0100

Chris Dressler, Senior Program Manager, **NORDSTROMshoes.com**

"So the challenge here was knowing the speed of how quickly we had to bring shoe vendors online."

© 2000 Microsoft Corporation. All rights reserved. Microsoft, Visual Basic, Visual InterDev, Visual Studio, Windows, Windows NT, and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Other product and company names mentioned herein may be the trademarks of their respective owners.

The Business Internet

"Tools like Microsoft Visual InterDev and Visual Basic, laid on top of Windows DNA, allowed us to bring this site to market quickly."

Built on the Microsoft® Windows® DNA platform using:

Visual Studio® 6.0
Windows NT® Server 4.0
SQL Server™ 7.0
Site Server 3.0, Commerce Edition
Also used:
Smith-Gardner MACS
Taxware Internet Tax System

To find out how Chris and his team built NORDSTROMshoes.com, go to: **www.SHOEstory.com**

Microsoft

Where do you want to go today?

Exchange 2000 Will Boost E-mail Services

Jasper will expand NetMeeting's scalability and conferencing features

BY LEE COPELAND

IN A MOVE designed to beef up its e-mail add-on services, Microsoft Corp. last week announced plans to deliver a new conferencing server that will run on Exchange 2000 later this year.

The conferencing server, code-named Jasper, will allow users to schedule and participate in video, voice and data conferences over a WAN or LAN or the Internet. From a specially allocated Web address, users will be able to share whiteboards and desktop applications from a standard browser.

Microsoft officials developed the server from technology acquired from Boston-based Flash Communications Inc. two years ago. It adds to Microsoft's free point-to-point conferencing tool, NetMeeting.

"The conference server is the industrial realization of NetMeeting," said analyst Dan Rasmus at Giga Information Group Inc. in Cambridge, Mass. "Despite its popularity, because it was free and included in Microsoft's install package, NetMeeting was never a robust solution, although it was a good example of how video and audio could evolve."

Eric Howlett, a senior systems engineer at Bank One Corp. in Chicago, uses NetMeeting and would consider Microsoft's new server to cut travel time and costs.

"We do not use NetMeeting a whole lot now, mainly because it's not available on a server," he said. "The most effective way to [host a conference] would be on its own server."

Microsoft plans to ship the conference server along with Exchange 2000 at midyear. The new server requires Exchange 2000 for security, user authentication and log-in and for access to Microsoft's global directory, Active Directory. However, unlike Exchange 2000, the conferencing server isn't integrated with Active Directory and therefore requires separate user identification, Rasmus noted.

While video and data conferencing have yet to gain wide corporate acceptance, corporations still want to find an alternative to the high costs of in-person meetings and teleconferencing, said Joyce Graft, an analyst at Gartner Group Inc. in Stamford, Conn. Microsoft officials said the conference server could handle 10,000 concurrent users.

But Graft estimates a much lower scalability range. "Microsoft numbers are typically very high," he said. "We usually divide them by two or three because they tend to define scalability under very unlikely parameters."

Microsoft officials said the server also contains a feature that will allow an information technology manager to control the amount of bandwidth allocated to a conference.

NetMeeting

Exchange 2000 Conferencing Server offers:

- Support for T120 and H323 conferencing protocols
- Multicast video, voice and data conferencing
- Separate server requiring Exchange 2000

Reverse Auction Cuts Training Cost

BY JULEKHA DASH

A new reverse-auction service offered on a training portal could lower customers' costs by as much as one-third, observers said.

RFP Exchange, launched earlier this month by TrainingNet Inc. in Billerica, Mass., functions like an online matchmaking service for buyers seeking training solutions. Using RFP Exchange, users can specify training requirements, such as how many people need to be trained and their budgets and schedules. Within a day or two, the user receives a list of vendors that matches his criteria with a comparison of vendors' prices and features.

Harold Cypress, national director for knowledge delivery at San Francisco-based Deloitte & Touche, said this kind of reverse-auction service could save him the several days it normally takes to identify and contact training vendors individually.

Over time, RFP Exchange may cut the cost of acquiring and identifying training vendors by as much as one-third, as vendors lower their costs to compete, Cypress said. He acknowledged that commodity products such as training videos and CD-ROMs will be more affected in price than training consulting services. Cypress used TrainingNet two months ago to develop an electronic-business curriculum for 1,600 Deloitte & Touche consultants.

Cushing Anderson, an analyst at International Data Corp. in Framingham, Mass., said that while reverse auctions have emerged in other industries, it was a new development for the training market.

Clark Aldrich, an analyst at Stamford, Conn.-based Gartner Group Inc., said he expects this type of matching service to heighten competition in the training industry and to "increase pressure on vendors to differentiate [products] significantly enough to create brand loyalty."

Healtheon/WebMD Acquires Two Rivals

Analysts raise integration issues

BY JULEKHA DASH

Internet health care company Healtheon/WebMD Corp. spent more than $5 billion this month purchasing some major rivals. The moves renewed analysts' questions about whether the Atlanta-based company can handle the technology challenges of integrating disparate systems from its numerous acquisitions.

The most recent deals announced Feb. 14 included Seattle-based OnHealth Network Co. for more than $300 million in stock, as well as Medical Manager Corp. and its subsidiary, CareInsite Inc., for about $5 billion in stock. Both companies are based in Elmwood Park, N.J.

All the acquisitions are likely to be completed by midyear.

By purchasing CareInsite, Healtheon will eliminate the "the only competitor of note left on the scene," said Claudine Singer, a health care analyst at New York-based Jupiter Communications Inc.

Since December, Healtheon has made at least two other major acquisition announcements (see chart) and several strategic alliances that require technology changes. The alliances include a partnership with San Diego-based Medibuy.com Inc. to create an e-commerce procurement solution for physicians, and an agreement to complete more than 50 million electronic pharmacy transactions for CVS Corp. in Woonsocket, R.I.

Despite its spate of acquisitions, Healtheon still faces a formidable competitor — "physician inertia," Singer said. Only 10% of the estimated 30 billion health care transactions are conducted electronically, and Singer estimated that 80% to 90% of all physicians still don't use the Internet to conduct transactions.

WHEN	WHO	WHAT	AMOUNT
FEBRUARY	OnHealth Network	Consumer health site	$300M
	Medical Manager CareInsite	Physician management Internet-based health care	$5B for both acquisitions
JANUARY	Envoy	EDI claims transactions	$2.5B
DECEMBER	Kinetra, a joint venture between EDS and Eli Lilly	Electronic clinical transactions	$300M*

With so many acquisitions and alliances, another big challenge for Healtheon will be to "keep track of everyone," said Mark Anderson, a vice president at Stamford, Conn.-based Meta Group Inc.

"It's not an easy task," to integrate various systems of acquired companies, said John Runningen, vice president of investor relations at Healtheon. But Runningen said he was confident that Healtheon's 1,700-plus engineers can tackle the task of integration. "We have a lot of manpower to make it happen," he said.

Many health care providers and bill payers connect to Healtheon via private networks, not via the Internet, which is the preferred method. "You can't convert legacy systems overnight," said Pavan Nigam, Healtheon's chief technology officer. Nigam added that the company wouldn't pressure health care providers to upgrade systems, but it would let "market pressures prod institutions."

SYMMETRA REBATE !!!

Your enterprise is only as available as its power

APC Symmetra® Power Array™: N+1 redundancy for 100% uptime

Dete eccess is critical to both your internel and extemel customers. Now that applications like massaging, Web integration and E-commarce are deemed mission-critical, losing power to your storaga and processors is not an option.

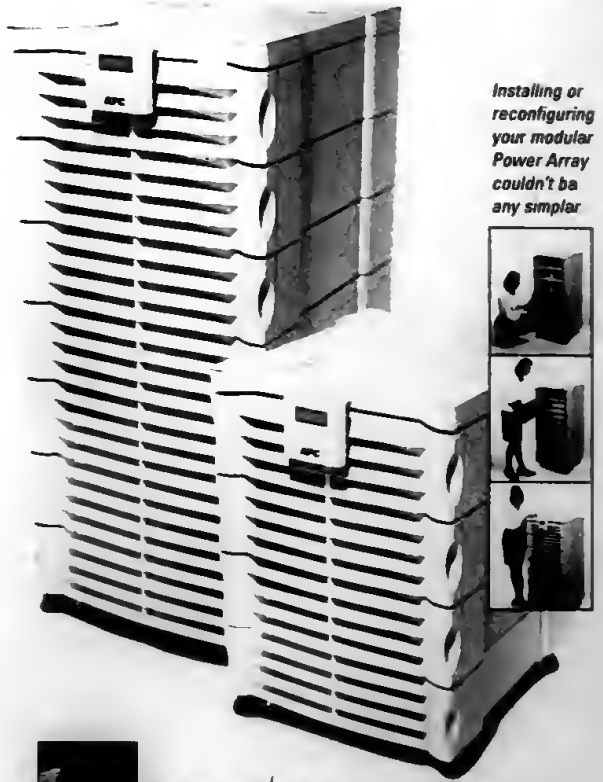
You need to be ready for the unexpected. APC's Symmetre Power Array is the single most highly available UPS in the marketplace. Sinca power problems are tha leeding cause of downtime, make sure you're prepared.

Consider how Symmetra protects your business:

- **N+1 redundancy design assures continuous availability –** If a module fails, the others instantly begin supporting tha full loed.
- **Scalabla power –** Additional 4 kVA modules can be added to expend to 16 kVA of power capacity (4 unit frame is expandable to 8 kVA)
- **Serviceabla whila load la up and running –** Additional battery modules increase runtima and all the modules are hot swappable, meaning no downtime.

Now you can easily manage power to your systems. APC MasterSwitch™ in your communications and computer racks can save you time and money by helping your staff to manage power proactively.

PowerView™ is a hand-held control panel for network administrators that configures and controls UPSs in rack, computer room, and datacenter environments.



Installing or reconfiguring your modular Power Array couldn't ba any simplar

"Not having a Symmetra in place would have resulted in lost data, corrupted hard drives and lost time to recover. The Symmetra system has more than paid for itself during this one outage."

- Bob Lesher and Charlie Bise, Information Technology, Exel Logistics

APC is a leader in the field of power availability. Our technology grows with your buainess and can help power protect your new applications as you roll them out. Contact APC today and let APC's Legendary Raliability™ work for you.

APC Symmetra® Power Array™ was recently granted US Patent No. 5,982,652.

APC
Legendary Reliability™

FREE Power Availability Kit - Get Legendary Reliability for your network.

To order: Visit *http://promo.apcc.com* Key Code r828z • Call 888-289-APCC x1386 • Fax 401-788-2797

©2000 American Power Conversion. All Trademarks are the property of their owners. SY4A9EF-USc ▪ PowerFax (800) 347-FAXX • E-mail apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston RI 02892 USA

Industry Players Rubbing Shoulders With Power Brokers

BY MARGRET JOHNSTON

Last month, an all-star group of high-tech executives was at the White House chewing the fat with White House Chief of Staff John Podesta when President Clinton dropped by unexpectedly.

It was an indication that Clinton thought the executives — including Intel Corp. Chairman Andrew Grove, Dell Computer Corp. CEO Michael Dell and Hewlett-Packard Co. CEO Carly Fiorina — and their high-tech political agenda were worthy of special attention.

The executives were at the White House to ensure that the president understood their support for normalized trade with China, and Clinton assured them that early passage in the Senate of the World Trade Organization treaty with China was also important to him, his press secretary said.

The encounter illustrates the ascendency of the high-tech industry in U.S. politics since 1996, the year of the last presidential election. These days, technology executives turn up regularly at the White House and accompany presidential candidates on the campaign trail, at congressional hearings and at events where politicians and industry leaders mix.

Tech PACs, Think Tanks Grow

Equally important, the number of political action committees (PAC) and think tanks representing technology companies' interests and the issues they track has increased significantly. PACs are formed by special interest groups and raise money for causes and politicians apart from the political parties.

"The technology community is getting involved in politics because it's going to be essential for their continuing prosperity," said Tim Hugo, director of CapNet in Washington. The group, formed in June, represents high-tech industries and includes Microsoft Corp., American Online Inc., AT&T Corp., IBM and Oracle Corp.

Hugo said it's clear to the high-tech industry that "if you don't engage government, government will engage you, and they may engage you on a level that you don't appreciate."

The amount of money contributed by high-tech PACs and individuals who work at high-tech firms has also grown considerably since the last presidential election. Figures compiled by the Center for Responsive Politics (CRP) in Washington show that high-tech donors gave about $348,000 to presidential candidates from January to September 1995.

In the same period last year, contributions to presidential candidates more than tripled, to $1.3 million, CRP figures show. Republicans received about $841,000 of the total.

Johnston writes for the IDG News Service in Washington.

Your enterprise is only as available as its power

APC Silcon® DP300E: an efficient, cost effective, high-kVA 3-phase solution

As your business grows and you consolidate your datacenter, our new line of high-end 3-phase UPSs will accommodete your growth and provide you with the Legendary Raliability™ you require for continued success in a high-availability world.

APC's ravolutionary Delta Conversion On-line™ technology offers reduction in energy loss end associated operating costs by a factor of four. It's elso the most efficiant 3-phase angine in tha market, with efficiencies higher than 95%. One look at Delta Conversion On-line will forever changa the way you think about 3-phese power protection.

- **Service and Support** – All APC 3-phase products are backed by APC's Global Services Organization. Whether you require facility audit services, installation and start-up services, power integration services, or maintenance and support services, APC's Global Services Organization is ready to assist.

- **Uptima/scalability** – Scalability to over 4 MW assures redundancy and constant uptime ovar many years. Starting at 10kVA, all units can easily and cost-effectively be configured in parallel redundant mode.
- **Manageability** – Enterprise users of Tivoli, CA Unicentar and HP OpenView managamant platforms can easily integrate the monitoring of all APC 3-phese and singla-phase devices. APC's popular PowerChute® Network Shutdown software allows 3-phase management from a Web browsar interface.

The APC DP Series UPSs received the 1999 PC Magazine Award for Technical Excellence

"The installed APC Silcon UPS systems have not only met but also exceeded our expectetions The sinusoidel input current elimmetes the problem of input hermonics."
- Peter Nikonowitsch, Engineering Manager, Hitachi Semiconductor

Find out today why customers rely on APC as their solutions provider of choice for high-end datacentar, facilities and networking power protection requiremants. Our technology grows with your businass and can help power protect your new epplications as you roll them out. Contact APC today and let APC's Legandary Raliability work for you.

APC
Legendary Reliability™

FREE Power Availability Kit - Get Legendary Reliability for your network.

To order: Visit *http://promo.apcc.com* Key Code r827z • Call 888-289-APCC x1385 • Fax 401-788-2797

©2000 American Power Conversion All Trademarks are the property of their owners SI4A9EF-US • PowerFax (800)347-FAXX • E-mail apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

Windows 2000

What is Windows 2000 Advantage?

Windows 2000 Advantage is the partnership among Microsoft, Compaq and Computerworld Enterprise Business Solutions to inform IT leaders about Windows NT and Windows 2000 technology by providing timely, useful information — in print and online — for planning and deploying Windows NT and Windows 2000 with Compaq services and solutions.

Online This Week

Subscriber survey reveals consistent Win 2000 approval

According to a survey of Windows 2000 Advantage subscribers, on the eve of Windows 2000's introduction, the new operating system is already considered a mission-critical product by 50% of respondents, even though many of them have yet to use it.

Compaq helps users migrate

Compaq offers an array of services to help customers get ready for the installation of Windows 2000. The services were developed based on the company's own experience with Windows NT, its relationship with Microsoft and its own internal rollout of Windows 2000.

Microsoft: Win 2000 is its most secure operating system ever

Speaking at the RSA 2000 security conference, Brian Valentine, vice president of the business and enterprise division of Microsoft, details all the effort Microsoft has put into making Windows 2000 what he called the most secure operating system the company has ever produced.

Would you consider yourself more confident of your move to Windows 2000 based on knowledge you've gained from the Windows 2000 Advantage website?

Cast your vote now at www.Windows2000Advantage.com.

Check out the current results:
Base: 297

Microsoft

Gates trumpets Windows 2000 scalability, reliability

Compaq-powered configuration sets world-record results

By Bruce Hoard

SAN FRANCISCO, Feb. 17 —Bill Gates to world: Windows 2000 scales for the enterprise. Windows 2000 is reliable. And here is the audited proof.

In introducing what he called "the most ambitious software project ever done," Microsoft's newly named chief software architect took dead aim at the critics who have repeatedly hammered away at Windows NT for its alleged scalability and reliability deficiencies. He did so by unveiling the world-record database benchmark results of a recently completed TPC-C test.

Those results came in the form of 227,079 order transactions per minute achieved with a system consisting of Windows 2000 and SQL Server 2000 running on 12 Compaq ProLiant servers in a scale-out configuration.

Gates called the record rate "enough to handle all the e-commerce done on the Web during the last year in two days," adding, "Our competition and our customers will be amazed by this."

Gates built his case for the three new Windows 2000 products — Windows 2000 Professional, Windows 2000 Server and Windows 2000 Advanced Server — by harkening back to the not-too-distant past when users wanting to scale up were faced with a technology gap that forced them to choose between inexpensive, but low-volume PC systems, and high-volume, and prohibitively expensive, mainframe systems.

In his words, "There simply was no best solution."

Windows 2000 closes that gap by allowing users to employ a software-based approach that enables them to realize unprecedented performance by combining large numbers of PC servers. The result is an economical total cost of operation that typically produces 100% return on investment in only a year.

Before disclosing the record-breaking TPC-C numbers, Gates described how tests conducted by the independent ZD Labs dramatically portrayed the reliability of Windows 2000 compared with its operating system predecessors, Windows 95 and Windows NT.

Operating under identical conditions, Windows 95 had to be rebooted after two days, while NT required a reboot after a week.

As for Windows 2000, Gates declared, "We're at 90 days and still counting. When you move up to this, it's a very, very different experience."

For the full text of this story, visit www.Windows2000Advantage.com

Gates called the record rate "enough to handle all the e-commerce done on the Web during the last year in two days," adding, "Our competition and our customers will be amazed by this."

ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows NT and Windows 2000 with Compaq Services and Solutions

▶ **Windows 2000 Conference & Expo**

Capellas outlines Internet, e-business strategies

By Bruce Hoard

SAN FRANCISCO, Feb. 14 — Saying, "We are committed to a world of interoperability," Michael Capellas, president and CEO of Compaq Computer, unveiled an array of initiatives designed to position Compaq as a leader in the rapidly evolving world of the Internet and e-business.

Capellas made it clear that by introducing concepts such as its ProLiant "eGeneration" strategy for empowering e-business, the company is bypassing narrow point solutions in favor of a comprehensive approach that will competitively position its customers in the Internet economy.

Compaq CEO Michael Capellas

Built on a three-phase foundation, the eGeneration strategy leverages Compaq's expertise in meeting the rapidly expanding needs of e-business customers who must support massive numbers of users simultaneously accessing huge amounts of data.

Phase 1 began with the launch of Compaq's 8-processor ProLiant servers in August 1999. It also included the incorporation of leading-edge technologies such as multiterabyte storage, hot plug capabilities and lights-out remote management capabilities.

Compaq will accelerate Phase 2 by complementing ProLiant 8-way platforms with the delivery of 32-way servers based on the Unisys Cellular Multi Processing (CMP) architecture beginning in the second half of this year. According to Mary McDowell, vice president and general manager of Compaq's Industry-Standard Server division, "Our relationship with Unisys will allows us to deliver a unique solution to customers whose needs require extreme performance and mission-critical stability. This solution is a strong element of Compaq's Windows 2000 Datacenter program."

Phase 3 focuses on a new class of solutions with introductions to begin next year. These will include leading-edge ProLiant servers — scaling to 32 processors and beyond with availability far exceeding today's levels.

Capellas also reminded his keynote audience at the Windows 2000 Conference and Exposition here that stability and reliability are two key components of Compaq's strategy for Windows 2000. Referring to Compaq's status as the leading worldwide integrator for Windows NT, he noted that Compaq will remain in "lockstep" with Microsoft on Windows when it comes to the development and deployment of Windows 2000.

"We are the industry leader for Windows NT computing platforms today, and we are 100% committed to maintaining and growing our leadership for Windows 2000 as a critical component of providing 24/7 NonStop e-business solutions to our customers," he declared. ◗

For the full text of this story, visit www.Windows2000Advantage.com.

Point of view

Windows 2000 features make it easier to manage

By Carla Catalano

Windows 2000 has universal appeal. Designed as the platform for distributed enterprise applications, Windows 2000 gives end users the power and flexibility to manage their systems — from the smallest to the largest network — securely, reliably and seamlessly.

New tools, features and improvements are built in to every major component of Windows 2000 with the intention of easing development and deployment of today's electronic business applications.

According to Tony Redmond, Compaq's director of applied Microsoft technology group, the standard management and administration tools in Windows 2000 co-operate within distributed environments and make it possible to remotely manage servers around the world.

That's a huge advantage over Windows NT — which couldn't manage large networks effectively because its management and administration tools were designed for small systems, Redmond says.

"For example," says Redmond, "with NT 4.0 and Exchange Server, you have separate information repositories — one for NT accounts and security information and one for MS-Exchange information. Windows 2000 uses Active Directory, which is also the information repository for Exchange 2000, so there will be one repository to manage instead of two. This means less maintenance, less overhead and reduced costs."

According to Liz Withnell, Worldwide Windows 2000 Program Manager at Compaq Professional Services, "A well-designed infrastructure, with appropriate levels of consolidation, will improve administration and reduce the need for technical expertise and servers in each and every site where the customer does business. Having a central point of management lowers the total cost of ownership significantly by reducing management complexity and the need for a large IT staff."

Active Directory scalability means fewer domains, which leads to server consolidation, one of the key Windows 2000 benefits. ◗

For the full text, visit www.Windows2000-Advantage.com.

www.Windows2000Advantage.com

GO

BRIEFS

Sun, Microsoft Invest In Same Start-Up

Sun Microsystems Inc. and Microsoft Corp., known to be fierce rivals, separately announced $25 million investments in BroadBand Office Inc., a Falls Church, Va.-based start-up that's rolling out Internet access, Web hosting and communications services. Sun said BroadBand plans to use Sun hardware and software for some services. Microsoft said in a separate statement that BroadBand intends to deliver messaging, e-commerce and other services using Microsoft software.

Motorola Buys C-Port

Motorola Inc. in Schaumburg, Ill., said it would buy programmable microprocessor company C-Port Corp. in North Andover, Mass., in a stock deal valued at $430 million. The companies said the acquisition will allow Motorola to develop faster high-bandwidth networks based on its DigitalDNA technology. C-Port produces a networking processor used in vendors' routing switches and other devices.

Mobile E-Commerce

Amazon.com Inc. and Finnish mobile phone maker Nokia Corp. said they would join forces to bring e-commerce to mobile users. The companies plan to roll out Internet-based mobile commerce services based on the wireless application protocol starting in the U.K. Seattle-based Amazon.com said its British Web site launched a section for mobile users last week.

SHORT TAKES

Networking vendor ADC TELECOMMUNICATIONS INC. in Minnetonka, Minn., said it will buy digital subscriber line systems maker PAIRGAIN TECHNOLOGIES INC. in Tustin, Calif., in a stock deal worth $1.6 billion. . . . Mountain View, Calif.-based REMEDY CORP., a maker of customer relationship management and e-commerce applications, said it would acquire the development team and the Ostream Migrator product of Issaquah, Wash.-based OSTREAM SOFTWARE INC. for $2.8 million.

Alcatel to Acquire Newbridge for $7.1B

Deal aimed at growth in telco gear market

BY DOMINIQUE DECKMYN AND MARTYN WILLIAMS

SEEKING to become a larger player in the carrier-class telecommunications equipment market, Alcatel SA said it would buy Newbridge Networks Inc. in a stock deal valued at $7.1 billion.

The acquisition will immediately make Alcatel a rival to Lucent Technologies Inc. and Cisco Systems Inc. in the market for Asynchronous Transfer Mode (ATM) equipment.

Newbridge Networks holds approximately 25% of the ATM market, Alcatel said.

The deal is part of a major restructuring in the telecommunications industry, said Jeffrey Kagan, a telecommunications analyst in Marietta, Ga.

"In five years, we won't recognize the industry or the players," Kagan said. "They are all scrambling to expand their size, scope, footprint, reach, core competencies and customer base in order to be everything to everyone, no matter where they are on the globe. This [acquisition] helps position [Alcatel] to do that."

Michael Neiberg, an analyst at Chase H&Q in New York, said the merger helps Alcatel keep pace with Cisco, which bought StrataCom Inc., and Lucent, which acquired Ascend Communications. StrataCom and Ascend are Newbridge competitors.

The merged company will have the necessary size to compete, said Neiberg. And Newbridge will benefit from Alcatel's experience in turning around companies.

After the merger, Paris-based Alcatel plans to create a Carrier Internetworking Division based at Newbridge's headquarters in Kanata, Ontario. The division will consist of Newbridge Networks and Alcatel's Carrier Data Division, which includes the company's Assymetric Digital Subscriber Line, IP and Internet-related equipment divisions.

Alcatel said acquiring Newbridge will help it get into the market for high-bandwidth data networking equipment for telecommunications carriers faster than it could by developing its own products.

Williams writes for the IDG News Service in Tokyo.

Integrating Acquisitions Key To Cisco's Growth Strategy

Networking giant plans 20 more buys

BY JAMES COPE

Hardly a week goes by without Cisco Systems Inc. making another acquisition. On Feb. 16, the networking giant said it would buy Growth Networks Inc., a silicon fabric maker in Mountain View, Calif., for $355 million. It would be Cisco's sixth acquisition in the past three months and its 21st since the beginning of 1999.

John Chambers, Cisco's president and CEO, said recently that the company plans to make another 20 to 25 acquisitions before year's end.

San Jose-based Cisco's acquisitions have contributed to its growth; for its second quarter ended Jan. 29, the company posted net income of $825 million on total sales that were up 53% to $4.35 billion. That's almost triple the $282 million the company netted in the same period a year ago.

But it isn't the frequency of acquisitions that makes Cisco successful — it's the company's ability to quickly integrate the technology of the acquisitions, said Jim Slaby, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Cisco will frequently acquire a company after working with it in some partnering capacity, Slaby said. That gives Cisco management a feel for how well the company's technology will meld with Cisco's.

Michael Speyer, an analyst at The Yankee Group in Boston, said another attribute that keeps Cisco rolling is its competitive mind-set. "When they enter a market, they aim to dominate it," Speyer said. "Cisco dominates Internet routing technology. In the Fortune 1,000, they're the market-share leader when it comes to [enterprise network] switching."

Analysts agree there's still plenty of equipment to be sold in the large enterprise space — Cisco said it increased its share of the enterprise market by 30% this past year — but the big corporate market is becoming saturated to the point where Cisco will be forced to look elsewhere for opportunities to increase its revenue.

According to Slaby, the service provider market is an area Cisco is likely to focus on.

More Growth Expected

Indeed, the service provider space is where Cisco sees the most revenue growth going forward, said Peter Alexander, a Cisco enterprise networking vice president. That's especially true in converging technologies, such as voice over IP, which lets voice and video travel the same pipes as data.

Analysts say these technologies won't gain widespread adoption until 2005. But Cisco believes they will take hold in the market much sooner.

Slaby said Cisco's key customers for converging technologies will be the next-generation service providers, who use packet technologies based on Internet protocols to transmit all information, including voice and video.

"These people are comfortable with packet technology," Slaby said. However, a harder sell will be the big, traditional telecommunications providers that are still locked into older circuit-switched technologies in a domestic market dominated by Lucent Technologies Inc. and Nortel Networks Corp.

Alexander said Cisco isn't asking its customers to replace their traditional phone systems with IP telephones.

Instead, it's recommending that users evolve into the next-generation technology.

Recent Cisco Acquisitions

Dec. 1 through Feb. 16

COMPANY	TECHNOLOGY	ACQUISITION COST
Growth Networks Inc.	Internet service provider switching fabric	$355M
Altiga Networks	Enterprise virtual private networks	$567M*
Compatible Systems Corp.	Virtual private network service provider	*
Pirelli Optical Systems	Optical networking	$2.16B
Internet Engineering Group LLC	Optical networking	$25M
Worldwide Data Systems Inc.	Consulting and engineering services for data and voice networks	$25.5M

*Combined cost of Altiga and Compatible Systems

The difference is intelligence.

www.microstrategy.

The Power of Intelligent E-Business

IT LEADERSHIP is about using every opportunity—every technology—to reinforce your company's purpose. It's about defining business imperatives and driving the acquisition of the right technology. But the daily demands of running a company and an IT infrastructure don't always allow the time to get up to speed on the latest innovations.

As Director of the AMS Center for Advanced Technologies, Dr. Butler's mission is to increase our understanding of emerging technologies. "Ours is a commitment to keeping AMS clients on the frontier of IT practice," she says. "To address technologies that will fundamentally change the business landscape."

YOU CALL THIS WORK?

MONTHS BEFORE MOST OF US SEE THE LATEST TECHNOLOGY, DR. BUTLER GETS A PEEK AT THE REALLY INTERESTING STUFF.

For example, her team's initial XML research yielded an intelligent agent that collects relevant information across multiple sources then synthesizes, categorizes and disseminates it based on a user's specified interests. "Our Next Generation Enterprise and Business Intelligence & Knowledge Management labs are collaborating now to evaluate emerging non-numeric mining tools," she proudly reports. "We'll be releasing the results soon."

And where does Dr. Butler gain her understanding of emerging technologies? From her peers, at conferences, from the Web and from *Computerworld*. The Newspaper for IT Leaders.

COMPUTERWORLD
THE NEWSPAPER FOR IT LEADERS

MARK HALL

Farewell, floppy

ALMOST USED MY floppy disk drive last week. A colleague told me that he wanted to send me a file, but his Internet connection was down. "I don't want to forget, so I'll just pop it on a disk and mail it to you," he said. When I opened his envelope, a CD-ROM fell into my hands. For some reason, I was surprised he had his own CD-ROM burner, vital as it was, considering that his file was 8MB, way too big for the floppy disk I had expected to receive.

MARK HALL is *Computerworld*'s West Coast bureau chief. You can contact him at mark_hall@computerworld.com.

Then, in one of those Homer Simpson, head-slapping, "D'oh!" moments, I realized that the floppy disk drive was not just dead, but long dead. I didn't even know where my floppy drive was on my 5-month-old laptop. And why should I? I have never used it.

Using any removable media today to transfer files is quaint. Sure, I still consider it rude to e-mail big files without the recipient's consent. But getting multimegabyte PowerPoint attachments doesn't upset me any longer. For one thing, these instances are becoming increasingly rare as more people simply point me to Web addresses to view multimedia content. For another, corporate network and storage capacities are ample enough to handle the vast majority of file attachments I'm likely to receive.

The puny amount of data you can put on a floppy disk makes it an irrelevant device. In the days of yore when hard disk drives maxed out at a couple hundred megabytes, 1.44MB looked like a pretty big number. It's just a spit in the ocean of information today.

If I were an IT manager, I'd rip out every floppy drive on every desktop. Not only are they useless, they are dangerous as entry points for viruses and exit points for sensitive information. Yes, most of the security issues are network-related, but you can at least try to defend against them. But you can't protect your company against an ignorant or disgruntled employee.

Any CIO that permits floppy drives on the company network puts the enterprise at risk far beyond any value of the device. It's time to say so long to the floppy drive. ◗

DAN GILLMOR

Despite Win 2k's tepid debut, Microsoft still rules

THE LAUNCH OF Windows 2000 came and went with only modest fanfare despite Microsoft's best efforts to turn tbe San Francisco announcements into a big event. Some observers took this as a sign that Microsoft's heyday bas passed or even that the company might be in trouble.

DAN GILLMOR is technology columnist at the *San Jose Mercury News*. Contact him at dgillmor@sjmercury.com.

Bull. Microsoft is still by far the most powerful single force in the technology industry. The woe-is-Redmond chorus is a combination of wishful thinking and misinformation. And Microsoft's public relations tactics are at least partly responsible for the impression that the company may somehow be facing tough times.

Consider the company's response after U.S. District Court Judge Thomas Penfield Jackson issued his scathing "findings of fact" in the antitrust trial last fall. The judge almost totally accepted the government's arguments, making clear he hadn't believed a word of Microsoft's testimony. The findings, by almost all expert accounts, are a prelude to a verdict against the software company.

Microsoft launched a furious public relations offensive, trying to convince the public that even if it was found guilty of wrongdoing — of course, the company continues to deny what almost everyone else not on the Microsoft payroll can plainly see — the offenses didn't justify any serious remedies.

The company then posted another quarter of massive earnings and revenue growth. Microsoft's cash-generation machine has accelerated despite a spending spree for new technology "outside such core businesses as Windows and the Office suite. Those investments in bandwidth and other technologies would be almost impossible for any other company, but they guarantee Microsoft a strong position in whatever markets emerge in coming years. Wall Street's valuation of Microsoft is a rational bet on further strong growth.

Anyone who thinks Microsoft's clout is ebbing needs only to read the March issue of *Wired* magazine. An article (*www.wired.com/wired/archive/8.03/deepthroat.html*) by John Heilemann reveals

how Silicon Valley's most powerful executives showed craven cowardice when government officials asked them to speak publicly about the need for stern remedies in the antitrust case.

Microsoft likes to talk about how the prices of personal computers keep dropping. What it doesn't like to remind people is that the price of a single, crucial component in desktop computers — the Windows operating system — hasn't gone down, and it certainly hasn't improved in functionality at anything close to the rate of hardware improvements.

Remember, too, that Windows has, for Microsoft, no marginal cost: A hardware manufacturer makes copies from a master disk for each new PC it sells.

Sure, Microsoft faces competition on the server, as it always has, and in the newer market for handheld devices. But more and more PCs are still being sold every year, and in that market Microsoft continues to wield almost absolute power and collect continued monopoly profits, generating more than enough cash to buy into the new technologies it covets.

Some trouble. ▶

GEOFFREY JAMES

Y2k waste left IT unprepared for a *real* problem

AFTER THE denial-of-service attacks this month on several major Web sites, it turns out that the Internet is far more fragile than anyone in the computer industry had been willing to admit. There are real, substantial problems with security and stability that should have been addressed years ago. But they weren't. Why? Because everybody was focusing their time and energy on a largely fictional problem: the so-called Y2k bug.

GEOFFREY JAMES is the author of the book *Success Secrets from Silicon Valley* (Times Books, 1998). (www.geoffreyjames.com)

I'm not saying that there weren't some two-character date fields that needed fixing. However, it's clear that the Y2k problem was nowhere as big as the hype suggested. The new year arrived without any significant problems, even in countries like Russia, Bulgaria and Vietnam, where next to nothing was spent on the problem. International Data Corp. conservatively estimates that as much as $19.9 billion worldwide was wasted on contingency planning and that salaries for extra New Year's weekend staffing alone cost $6.5 billion. That money represents manpower that could have been devoted to something useful, like retooling Web sites to make them more secure.

The Y2k mania was fueled by fundamentalists hoping for the end of the world, authors trying to sell Y2k self-help books and radio talk-show hosts hawking overpriced gold coins. As each piece of misinformation was published or republished on the Web, Web sites built connecting links, creating an entire cyber subculture with a self-reinforcing world view. The U.S. government added to the problem by launching "fact-finding" groups stuffed with self-proclaimed experts who published speculation as fact, giving it instant credibility. One government Web site, for example, stated that "most computer programs" had the Y2k bug — an absurd exaggeration. The mainstream press, from *Business Week* to *USA Today*, swallowed the story hook, line and sinker.

The computer industry, seeing an opportunity to make big bucks, simply played along with the hoax. Market research firms kept the furor going, even as their predictions about pre-Y2k problems never materialized. Hardware and software vendors were aware that Y2k was basically a no-op but weren't willing to pass up a seemingly irrefutable reason for companies to upgrade their systems. As for the IT services vendors, they had their snouts so deep in the trough that the last thing they were going to do was say anything that might keep customers from hiring more Y2k-related help.

What's deeply troubling to me is that the IT community — which should have known better — didn't stand up and cry foul.

Most of us knew, long before the fateful date, that Y2k was mostly hype. As early as last spring, a blind survey of 1,100 IT managers conducted by Addison Whitney revealed that only 8% of them considered Y2k an issue worthy nf keeping them awake at night. And yet very few IT managers were willing to stand up and admit that spending more on Y2k would simply be throwing good money after bad.

The simple fact about Y2k is that a hell of a lot of money was wasted, partly because the IT community didn't have the courage to stand up and say, "We've got more important things to do!" And now we're stuck with a real problem — hacker attacks that threaten e-commerce. We'll scramble and no doubt eventually fix the problem, but only after some companies and bottom lines have taken it on the chin. And that's a damn shame, because it didn't have to be this way. ▶

READERS' LETTERS

Intel should avoid legal maneuvering

MANY PEOPLE in the industry know the pressure that Intel has put on the motherboard makers that have made boards for Advanced Micro Devices Inc.'s Athlon processor, and makers like First International Computer Inc. (FIC) should be commended for standing firm in support of the Athlon. Now Intel has filed suit with the U.S. International Trade Commission against Via Technologies Inc.'s new 133 chip set ["Intel seeks to bar Via chip sets from U.S.," Computerworld Online, Jan. 19].

Of all the motherboard makers it could have named in the suit, Intel named FIC. How can Intel be so blatant in its actions while the windows are being slammed shut on Microsoft?

Surely Intel has the ability to conduct business on the strength of its products and not by legal maneuvering.

Timothy Martin
Computer operations manager
Taylors, S.C.

SNMP inaccuracies

DEBORAH Radcliff quite correctly identifies a huge hole in most systems' security — SNMP ["Cover Your SNMP," Technology, Feb. 7]. By default, there is little security to protect unauthorized persons from viewing potentially useful information that could be used to hack into remote systems. However, there were a few inaccuracies I would like to point out.

Radcliff stated that SNMP uses the community name "default." The default name is "public." Also, SNMP does not use TCP port 161; it uses UDP ports 161 and 162. Simply changing the community name on all your SNMP-enabled systems is not sufficient. For total security, the network administrator needs to employ additional mechanisms such as IPSec.

John Howie
Consultant
Co-Active Inc.
West Hollywood, Calif.
Jhowie@msn.com

Deborah Radcliff responds: *I 'fess up. You caught me on the "public" default password and the UDP boo-boos. And, I assume by IPSec (a standard for traffic encryption), you mean VPNs? Or are you referring to Windows 2000 IPSec built-in features?*

Sometimes I sound like a broken record, but I'll say it again: The best defense is proper configuration and layered security. You and two other readers, Shawn Tu and Steve Shockley, point out a couple of other errors. You all suggest I was wrong to point out the /etc/passwd vulnerability on Solaris boxes because that file contains no passwords except in older versions of SunOS. Stuart McClure of Rampart Security, along with other security consultants, says he still finds a lot of these older boxes. But I should have included that, in more current Solaris boxes, the user information is stored in /etc/shadow.

Lastly, Shockley claims that I was also mistaken when I wrote that you could view UDP services such as name server. He suggests the DNS server only uses TCP, which is wrong. DNS zone transfers, a favorite DNS function hackers love to exploit, always run over UDP port 53. DNS lookups run off TCP port 53.

More letters, page 38

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.

DAVID WELDON

Feds using musty numbers in IT jobs outlook

CONGRESS IS ONCE AGAIN expected to take up the issue of raising the cap on H-1B visas for foreign-national professionals this year. A recent proposal would even increase the number from 115,000 to 190,000 annually, largely in response to projected job growth in the information technology industry.

Unfortunately, Congress will once again debate the issue without having a clue about what the IT population is. The Bureau of Labor Statistics attempts to track such things. But it continues to use generic and outdated job categories, and its published workforce numbers are generally 2 years old, hardly of any use in an Internet-time economy.

DAVID WELDON is *Computerworld*'s editor for IT Careers. Contact him at david_weldon@computerworld.com.

Two recent studies claim to project technical job vacancy rates. But those studies relied on the vendor and consulting segments of the industry, which are minority segments and therefore don't truly reflect overall IT employment trends.

So how many people work in IT right now, how many vacant jobs are there and what will be needed in the near future? No one *really* knows. And we need to.

Consider a few factors that make the IT population such an elusive number:

College enrollments: Three years ago, a well-publicized study of college enrollments (reported by the Information Technology Association of America) in IT was released. The study, based on data which was then 2 years old, cited a continual decline in college IT graduates. This study fueled a great deal of alarm that we wouldn't be producing enough new technical workers for years to come. Unfortunately, colleges and universities were already reporting that their enrollment declines had leveled off or were on the upswing, and by last year enrollments had doubled or tripled at most leading IT programs. The anecdotal evidence, therefore, suggests we'll make up for the previous enrollment decline in two years.

Job vacancies: During the past two years, a tremendous number of IT professionals decided to heed the call of consulting and gave up the full-time employee lifestyle. Fueling the migration were the well-publicized salaries of skilled consultants and the tremendous need for contractors and consultants to work on Y2k projects. Many companies lost full-time staffers as a result and had to place contractors or consultants in key positions, while job requisitions went unfilled. Despite the fact that, in many cases, IT professionals were performing the tasks, they weren't counted as employees, and the jobs were counted as unfilled for months. Vacancy rates were often overinflated. Now, with Y2k a fleeting memory, many of those contract workers are available for staff jobs again.

The new Net workforce: The explosion of Internet-related companies and jobs can easily mislead the general public to assume we're becoming a totally techie workforce. But many of these new jobs are held by people from non-IT backgrounds. Nevertheless, for many companies, Internet-related jobs will represent their greatest job growth for the next couple of years.

Obviously there are many conflicting issues at play here. But however you view the worker shortage or skills gap projections, IT has become the critical workforce in our economy. It's time Washington got a true handle on the number of IT workers we have, and the number we'll need. It's too important an issue to keep guessing at. ◗

MICHAEL CUSUMANO

'Made in India' a new sign of software quality

I JUST RETURNED FROM a three-week trip to Asia, including nearly a week in India, and I can report that the Internet start-up craze is alive and well in Japan, China, Taiwan, Thailand and India. Most impressive, though, were the achievements and potential of India's software industry.

MICHAEL CUSUMANO, co-author of *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft*, is a professor at MIT Sloan School of Management. Contact him at cusumano@mit.edu.

Almost everywhere you go in India, you see apparent chaos. In traffic jams you have Mercedes-Benzes and 1950s-era cars and trucks competing with bicycles, three-wheel vehicles and carts pulled by horses and oxen. People in cars honk their horns incessantly, as if they can really influence the confusing flow of traffic. Everybody stops to let cows cross the road. Masses of destitute people live in abominable roadside huts and tents. There's a scarcity of basics such as clean water. Bazaars spring up without notice. Crowds of people are everywhere, many of them waiting for buses or walking. In parts of India, it seems that the population increases faster than the food supply.

And then you have the Indian software industry. Recent data I have seen says that of the top two dozen or so software development facilities rated at Level 5 — the highest level on the 1-to-5 process maturity scale established by the Software Engineering Institute (SEI) at Carnegie Mellon University — 11 are in India. (One is in Japan, and most of the rest are in the U.S.) The 11 Indian firms include U.S.-owned subsidiaries such as Motorola India Electronics Ltd. and IBM Global Services India and local companies such as Satyam Computer Services Ltd., Tata Consultancy Services and Wipro Infotech.

I have some personal history (and minor bragging rights) in India. In 1990, I consulted for Motorola on software processes, using my book *Japan's Software Factories* (Oxford University Press, 1991) as a blueprint. To make up for a shortage of programming talent, Japan had taken to standardizing around best-practice development methods and encouraging reusability and Japanese-style quality-control techniques. NEC, Toshiba, Fujitsu and Hitachi made impressive gains in productivity and quality, and Motorola officials were interested in creating a Japanese-style software factory within the company. When it proved difficult to get U.S. managers interested in the idea of a software "factory," Motorola decided to try a "clean sheet" approach in India. In 1991, this became Motorola India, which now has more than 500 software engineers as well as an SEI Level 5 rating. I also learned that India's largest software company (also an SEI Level 5), Tata Consultancy, has used *Japan's Software Factories* as a key input for its facilities, especially for recent Y2k work.

However chaotic the rest of India may seem, India's engineers are world-class. According to data collected by Deependra Moitra, general manager at Lucent Technologies India, the country's software industry generated some $5.5 billion last year for the nation's economy, and that figure was growing at an annual rate of 50%, up from a mere $20 million in 1989. India exported software to 86 countries last year (mainly the U.S. and Europe). Companies now employ some 260,000 software engineers and are adding 40,000 per year, though businesses are fighting to attract and retain experienced engineers.

In the 1980s, Japanese software factories developed great process capabilities, too, but never moved much beyond mainframe systems for the domestic market. That's finally changing, such as with Web-enabled cell phones, although Japanese computer companies are still struggling. Even if Indian software engineers never invent new products or standards, India's software companies have already made invaluable contributions to the country's economy and reputation. "Made in India" is a sign of quality — at least in software.

The bottom line for U.S. managers? Buy Indian software, set up software facilities there and study how India has made progress so quickly in software quality. ◗

Saving the world from **the indignities of the company picnic.**

One person at a time.

FreeAgent.com

READERS' LETTERS

Get facts straight on racial equality in IT workforce

I READ "IT Industry Lags Behind Nation in Hiring Blacks" [Business, Jan. 31] with dismay.

The information is misleading and, to be frank, pointless. The apparent intent of the article is to encourage hiring according to racial characteristics as opposed to hiring qualified personnel regardless of racial or ethnic background.

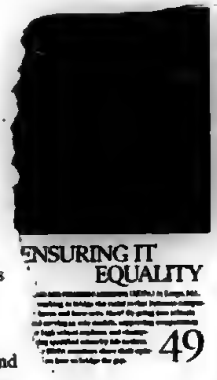
Freeman Fridie's brutally racist statement, "There is very little color in the high-tech industry," is indicative of the strong antiwhite discrimination evident in the IT marketplace. Isn't white a color? The chart accompanying the article shows that whites are also underrepresented in IT. Why doesn't Fridie or the author question the gross overrepresentation (almost 2.5 times the representation in the general population) of Asians in IT? Why doesn't the article explain the 10% fall in white employment in IT (the only group to have reduced numbers in the time period indicated)?

Shannon Brown
CEO
Rubicon Gulch Software LLC
Manheim, Pa.
shannonbrown@rubicongulch.com

TWO ARTICLES concerning racial equality within IT were featured in *Computerworld*'s Jan. 31 business section. Black Data Processing Associates' Curvie Burton stated that positions currently filled with foreign IT workers could be filled with African-Americans ["Moving Beyond the Racial Ravine," Business].

It is a well-known fact that the U.S. lags behind in educating our youth regardless of social or racial composition. As noted in the article, African-American youths often lag behind mainstream America in education, further complicating racial workforce statistics. The lack of truly qualified candidates in the market requires many of the highly technical positions (and often the higher-paying positions) to be filled with qualified foreign citizens.

With more than seven years of global IT management experience, I have had the pleasure of working for corporations that promote and practice diversity in the workplace. However, hiring criteria in all jobs remained the same. Candidates must have a proven background, required technical skills and exceptional interpersonal and business skills. The successful candidate will be the most qualified individual regardless of race, nationality or gender. That individual must then perform in that position for retention and advancement.



Today's business requirements do not allow substandard performance for the sake of IT workforce statistics. Until the U.S. improves its educational systems at all social and cultural levels, corporate America will continue to use foreign visas to find the best of the best. The statistical makeup of the IT workforce is only a symptom of a much larger problem.

W. P. Thacker
Nashville
sloth_industries@hotmail.com

Microsoft deserves breakup

MARK HALL says a breakup of Microsoft would not be necessary thanks to the recent rise in competition. But that rise was only possible because Microsoft was treading carefully due to the antitrust lawsuit.

It is essential for the Justice Department to follow through with punitive action on the scale of a breakup so that antitrust action will continue to be an effective deterrent to companies in the future.

Philip Brown
Lakewood, Calif.

WHAT IS IT that Microsoft owns that allows it to become a monopoly? The operating system, or more specifically, the application programming interfaces (API) to which the application developers write their code. By breaking up the company into several little companies ["Commonsense Law," News Opinion, Jan. 31], you will have done nothing to stop or hinder the "operating system Baby Bill" from continuing its monopolistic ways.

It would be better to force Microsoft to give away its APIs. Let all other makers of operating systems have the same APIs so that developers can write applications that can run on any platform (assuming the operating system makers would be interested in adding the APIs to their operating system products).

Dale Cosgro
Corporate account manager
The Santa Cruz Operation Inc.
Santa Cruz, Calif.
dalec@sco.com

IS MARK HALL out to lunch? Microsoft abused its monopolistic power to further entrench itself across product lines and into new markets. This allowed it to unfairly and *permanently* damage its competition. The penalty for this criminal action should have permanent effects that at least begin to punish Microsoft. Nothing short of breakup will be of lasting effect to Microsoft.

Hall's counters that Microsoft is no longer a monopoly and that many foolish IT people locked themselves in too deep with that monopolist do not erase the fact that Microsoft is where it is today due to illegal abuse of monopoly power.

Russell Petroe
Technical specialist
Warrensburg, Mo.

Railroad report appreciated

THANKS TO Kim S. Nash for her much-needed report on Norfolk Southern ["Merged Railroads Still Plagued by IT Snafus," News, Jan. 17]. I had bought its stock (and some of CSX) in the late '80s and had hoped it would grow sufficiently, pay dividends and provide a legacy for my children and grandchildren. The stock as of today is 17 3/4. Last May, just before the Conrail merger completion, it was 35.

The brokerage and company reports were sileot. I even wrote to the chairman trying to obtain information as to why the stock's performance was so poor. There was no response. It's times like these that I feel that the executives of corporate America should be judged and reverse-compensated (having to pay deeply from their own pockets) for poor decisions, personal rivalries and policies.

Gene Flinter
Seymour, Tenn.

Give e-comm human touch

E-COMMERCE vendors still don't get the fact that real, live people are the best means of providing e-mail customer service ["Get the Right Answer, RightNow," Technology, Jan. 17]. Trying to avoid answering e-mail by substituting FAQs and knowledge bases won't cut it. Greg Gianforte of RightNow says, "In most cases, e-mail is a black hole," and he's right. But the solution is not to buy more software; it is to hire knowledgeable people to answer your e-mail — and enough of them to do it fast. In the long run, answering e-mail doesn't cost — it pays.

I've been providing e-mail customer support for online information products since 1992, and I can tell you that if you give a customer a good, solid answer to an e-mail question, and you do it within 24 hours, you've got a happy customer who will come back and spend more money with you.

John Kafalas
Kafalas.com LLC
Flagstaff, Ariz.

Best OS gives best support

THE ARTICLE "Compaq's Effort to Integrate Digital Moves Ahead Slowly" [News, Jan. 31] left me scratching my head a bit. Specifically, the quote from Kal Raman of Drugstore.com Inc. in the last paragraph, saying that Compaq's support service for Digital is good but that its support of NT is lacking.

NT is owned and written by Microsoft. It seems perfectly reasonable to me that Compaq would do a better job supporting its own products. And if you look at what we *pay* for support of these first-class operating systems, it makes even more sense. If you want first-class support, buy a first-class operating system.

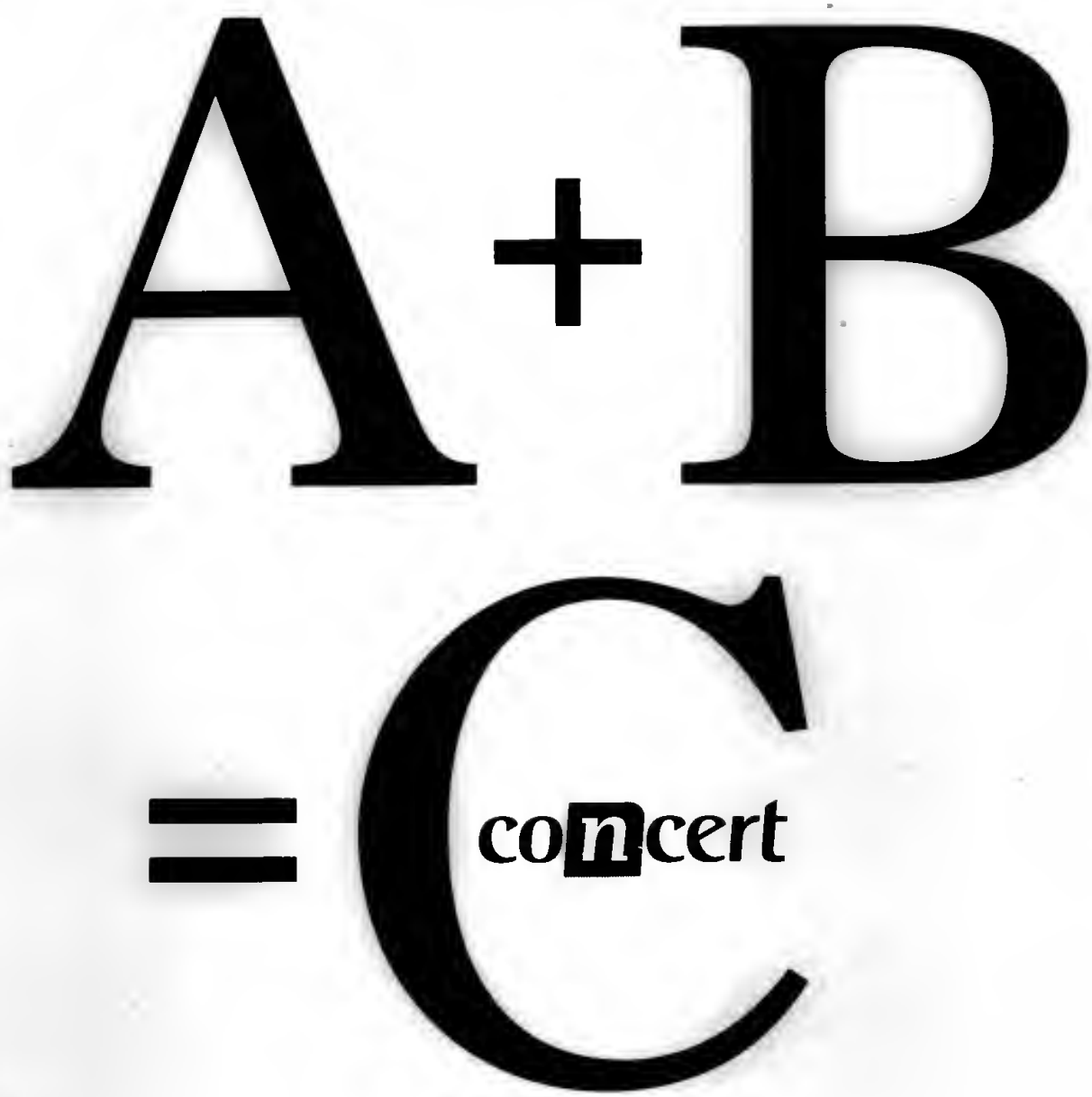
Phillip A. Kriley
Systems manager
Allegheny Ludlum Corp.
PKriley@AlleghenyLudlum.com

A bigger barrier to Web-enabling CRM

DEBORAH RADCLIFF'S Jan. 24 article "The Web Meets the Call Center" suggests that technology aspects are the major barriers to the Web enabling the call center. I have found process to be a bigger barrier.

Web-enabling CRM applications requires little more than bolting on front ends like Allaire's Cold Fusion that translate SQL into dynamic HTML. The real trick is presenting service processes to best showcase your company. In a recent CRM-to-Web conversion engagement, I first had to create call- and defect-tracking processes before worrying about how to present the data. I borrowed liberally from ISO 9001. Once I had a meaningful service process to present, how to present it became pretty straightforward.

Matt Conescu
Amherst, N.H.
matt@conescu.com



Simplicity[n]

Announcing the creation of a new company that will provide simpler solutions to the complexities of global communications. Concert. A new joint venture that harnesses the resources of AT&T and BT to make connectivity work like never before. Whether you're a start-up Internet service provider, an established multinational or a global carrier, Concert offers the expertise to make sense of communications technology today, and the power to deliver your dreams tomorrow.
When communications are as simple as ABC, the possibilities are endless[n]

AT&T

BT

Global communications simplified to the nth degree.

www.concert.com

BUSINESS

FAST-TRACKING EXCHANGES

Business-to-business exchanges are all the rage, but they can take time to set up. Integrators are helping exchanges launch at lightning speed, contributing technology, services and business expertise in exchange for a piece of the pie. ▸ 42

RESTRAINING SAP ROLLOUTS

Some companies want to roll out SAP's data warehouse simultaneously with R/3 to compensate for R/3's notoriously inadequate reporting functions. Users who have tried it say, "don't." They say each application is a job-and-a-half to implement; putting in both at once is just too much. ▸ 42

OLD DOGS, NEW TRICKS

Old-line manufacturing companies are rousing the troops, loosening restrictions and trying to move forward on e-commerce models. The trick is to teach managers and staffers who are trained to avoid risk that it's OK to make mistakes, if the goal they're pursuing is worth the effort. ▸ 44

RULED BY FEAR

Some companies are frozen by fear of the Web. Managers worry about profit exposure, and staffers worry about career catastrophe, Kevin Fogarty writes. Those who can manage the fear and keep an eye on their goals can develop an e-commerce strategy that makes sense, rather than throw money away online. ▸ 44

SIERRA REWARDS

What's it like to work at Sierra Club? Not lucrative. But the rewards of working at something you believe in can sometimes compensate for a smaller-than-you'd-like paycheck. ▸ 46

A GOOD MATCH

The AOL/Time Warner deal is more than a megamerger. It's a partnership between a manager who can create a business and one who can capitalize on existing businesses, Jim Champy writes. ▸ 46

WEB-IFYING

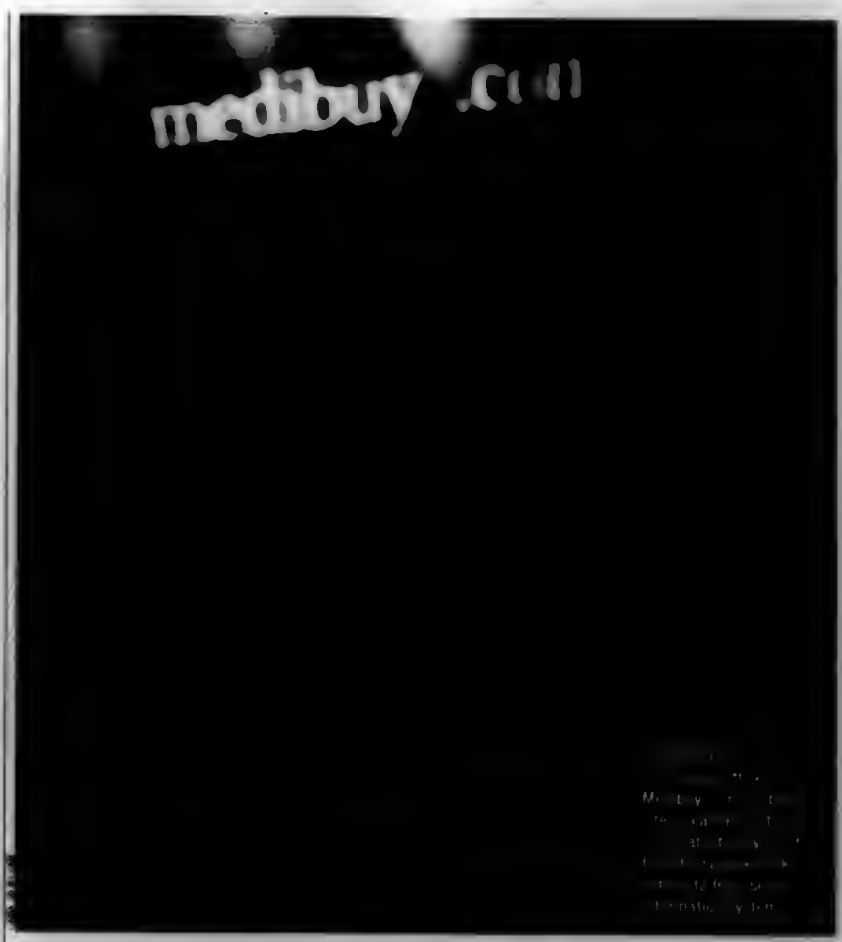
In Web projects, IT folk require a lot more than technical know-how. They have to be negotiators, deal-makers, astute businesspeople and, sometimes, diplomats. Making it work requires staffers with skills normally expected of top managers. ▸ 50

BITCH SITES

They're places people go to to grouse about working conditions and how unfair you are to them at work. They're not isolated bulletin boards anymore, they're public, influential, and you need to know what to do about them. ▸ 52

MORE

Advice 59
Careers 54
Opinion: Jim Champy 46
QuickStudy 56



IN THE MIDDLE OF B-TO-B TRADES

TWO DIGITAL EXCHANGES — Medibuy.com and Agriplace.-com — show how sellers can find buyers in the exploding business-to-business marketplace. Most of these exchanges are also shopping — for participants. But e-commerce analysts warn that it won't be long before economic factors will compel every business to participate in some fashion.

48

Tech-for-Equity Deals Speed B-to-B Rollouts

Integrators offering services, systems, business know-how, not just money

BY JULIA KING

New business-to-business marketplaces are springing up online in weeks rather than months, thanks to a growing venture funding trend under which investors provide technology and business expertise in exchange for a piece of the action.

What's behind the blurring speeds is a cutthroat race to acquire customers. Analysts said whoever acquires a critical mass early has the best chance of surviving a shakeout during the next two years within the ultralucrative business-to-business e-commerce arena.

Cambridge, Mass.-based Forrester Research Inc. forecasts that digital marketplaces will have captured 53% of $2.7 trillion in online trade by 2004.

Online Fast

Internet service firms TechTrader Inc. in Washington and Context Integration in Burlington, Mass., already have brought new marketplaces online in less than 12 weeks. That's about one-third the time it typically takes established brick-and-mortar companies to develop and launch business-to-business e-commerce sites.

Earlier in February, for example, Cincinati-based GE Aircraft Engines launched an online customer Web center that took a 40-person e-commerce team nine months to build, according to John Rosenfeld, the firm's e-commerce leader.

Also this month, Chicago-based Andersen Consulting announced a network of 17 so-called dot-com launch centers that offer start-ups fast access to technology and services in exchange for cash and equity in the new companies.

MORE THIS ISSUE
For more on business-to-business marketplaces, see page 48.

TechTrader's specialty is creating and launching business-to-business exchanges that let buyers and sellers search for and compare commodity products and services based on hundreds of different attributes. In exchange for technology and services, TechTrader collects an initial implementation fee, which can range as high as $200,000, plus a percentage of the value of future marketplace transactions, according to Jacob Pechenik, CEO of 18-month-old TechTrader, which was founded by a group of MIT engineering graduates.

TechTrader created its first business-to-business exchange in-house in 12 weeks and spun it off as PackagingInsider.com., an online marketplace for the packaging industry.

The exchange not only enables manufacturers to buy packaging, but also to figure out what size and quantity of containers they need based on the compositinn of their products.

Being first to market was also the primary driver at GoCargo.com, a new business-to-business shipping exchange for importers and exporters, which also took 12 weeks to launch online.

The downside is that for now, the exchange doesn't provide back-end integration with buyers' and sellers' enterprise systems to conduct the transaction once the comparison shopping is done. That will come later, said GoCargo CEO Eyal Goldberger.

"We were focused on designing a system that gave key value to customers fast without losing distraction to additional features, which we can add down the road," Goldberger said.

Dror Liwer, chief technology officer at Context Integration, agrees that speed is critical. But until a shakeout occurs, "my concern is there's going to be so many exchanges that you won't be able to see the forest through the trees," Liwer said.

Users: Don't Launch R/3, Warehouse Simultaneously

Each requires major dedication of labor

BY CRAIG STEDMAN

The lack of good reporting tools inside SAP R/3 is pushing some users to attempt simultaneous rollouts of the ERP system and SAP AG's new data warehousing software so their business analysis capabilities won't be diminished.

Their goal is to give business analysts and managers the tools they need to report on and analyze all of the transaction data captured by an enterprise resource planning (ERP) system such as R/3. But their advice to other users: Don't try this yourself unless you absolutely have to.

"Don't do them at the same time," said Dan Barnett, a business planning analyst at Exxon Mobil Corp. in Irving, Texas. "It requires an extraordinary amount of coordination, and it [meant] a lot of late nights."

Prior to its merger with Exxon Corp., the former Mobil Corp. went live with both R/3 and Business Information Warehouse early last year. There was a good business reason for doing that, Barnett said: Mobil wanted to have a reporting system in place for its end users, and R/3's built-in tools weren't good enough.

But it wasn't easy. "I've never climbed Mount Everest, but sometimes it feels like I did," he said. The project's nickname was Project Everest.

Montana Power Co., a utility in Butte, Mont., started out with a combined installation, but business and information technology workers involved in the R/3 rollout were too busy to spend much time worrying about the data warehousing part of the project, according to Mark Palagi, a senior information analyst at the utility.

"There's a limited number of people available, and they really can get stretched pretty thin on these projects," Palagi said.

The utility, which plans to go live with R/3 in May, hasn't stopped working on Business Information Warehouse altogether. But the data warehousing software will initially be tied to an existing non-R/3 customer billing system when it's turned on later this year. R/3 data will be added afterward, although the plans to do that haven't been finalized yet.

The World Bank adopted a similar strategy after an attempt to tie together R/3 and Business Information Warehouse in a single rollout turned out to be "extremely difficult," said Luisita Guanlao, manager of data administration at the Washington-based lender.

The two projects were competing for attentinn from the same set of business and IT workers, Guanlao said. And the configuration of the R/3 system was being changed on the fly, making it difficult to keep up on the data warehousing side. "We were working with a moving target," she said.

To escape that dilemma, the bank decided to hook Business Information Warehouse to some older and more stable project management applications before developing any R/3 ties, Guanlao said. That combination went into use last July, and the first feed from R/3 wasn't added until October.

AT A GLANCE

Keep 'em Separated

Many R/3 users are interested in SAP's data warehousing software because:

- R/3's reporting tools require a lot of programming and are too complex to use
- Running queries in R/3 could bog down its ability to process business transactions
- Business Information Warehouse lets end users run reports from Web browsers

Firms Adapt to Still-Evolving SAP App

For some SAP users, the challenge of rolling out Business Information Warehouse has been increased by the fact that the software is still something of a work in progress.

For example, Mobil last year went live with one of the first releases of the data warehousing package. But at the time, SAP didn't have many ready-to-use reports or data marts developed for oil companies such as Mobil.

That meant Mobil had to take a do-it-yourself approach to creating reports for end users, said Dan Barnett, a business planning analyst at what is now Exxon Mobil.

SAP is now shipping a more advanced version with increased data warehousing functionality [News, Feb. 14].

"I'm so jealous of people who are starting out now because [the new release] is just going to be so much better than what we had available to us," said Daniel Curran, manager of data administration and warehousing at Hercules Inc. in Wilmington, Del.

Hercules, a $3.6 billion maker of chemicals, began using an earlier version of Business Information Warehouse last year.

But there's a catch: Release 2.0 is becoming available in two stages, with full functionality not due until June. And SAP officials said the first batch of the 2.0 code that's now shipping will only be supported until year's end.

Even after Release 2.0 is fully available, several users said, installing the data warehousing software will still be a big enough job that it would be best to do it separately from a rollout of SAP's R/3 system. – *Craig Stedman*

THE BUSINESS VALUE OF CERTIFIED APPLICATIONS

quality that go into building them.

PUT TO THE TEST
Matthew Parsons, of Pfizer Inc., helped develop the challenging new specification for the Windows® 2000 certification program.

Not scheduled for a tropical vacation this year? If TCO for your corporate technologies went south instead, some of your IT headaches could disappear anyway. | ***By Bill Laberis***

CERTIFIED APPLICATIONS: TAKING CARE OF BUSINESS

FOR A TECHNOLOGY TO HAVE maximum value, it must deliver core benefits to IT and to the organization. Simply put, these core benefits must make life better and the job easier for IT while lowering the technology's total cost of ownership (TCO) for the company.

You can probably count on one hand, without affecting your typing speed, the number of times a major product or technology has delivered on both promises. Thus, if something new comes along claiming such double-barreled value, your skepticism meter ticks up a notch or two. That was to be expected. Before now.

Available for users today, with more waiting in the wings, is an elite corps of applications which have been certified to make maximum use of the wealth of features in Microsoft's® Windows® 2000 operating system. These Windows 2000-certified applications provide users with the richest possible Windows 2000 experience and have passed a tightly controlled, independently verified testing process unlike any before.

In addition to the Windows 2000-certified applications, there are currently more than 7,000 non-certified applications that also run on Windows 2000. But the certification process and the applications that

stand up to its test have been designed from the ground up to improve the overall quality of IT life, while making your organization more productive.

GETTING WHAT YOU NEED

What would make your life easier and your job better? If you have many PCs, workstations and notebooks in your management purview, then greater application reliability and management probably top your list of criteria for an improved worklife. And if you can improve reliability and management, preserve your company's investment in these technologies, *and* simultaneously deploy applications more quickly, then TCO will head south, where you want it to go.

For IT and the company to realize such benefits, several things must occur at the application-deployment and upgrade levels.

- Applications must install in a standard, unified way. This avoids costly rescripting of new software, while minimizing the "DLL hell" of conflicts among shared components.
- New applications software must integrate cleanly with all the existing software already up and running.
- The system must meet the demands of mobile professionals who increasingly insist upon going anywhere on the network and using any available machine there. These folks also want to see their individual user preferences on any machine they happen to use.
- Applications must run reliably in today's highly controlled and secure network environments, enabling administrators to control desktops even in a lockdown situation.

MAKING IT HAPPEN

For more than two years, a team of 10 major user organizations, several independent software vendors, and Microsoft have labored to produce the Application Specification for Windows 2000. The purpose of this detailed specification is to ensure that the applications certified under its rigorous standards fulfill the promise of the points above. The specification is a roadmap for building highly reliable applications on Windows 2000, and certification is a guarantee to the user that the application will fully exploit the benefits and new features of Windows 2000.

How tough are the specification and the certification process themselves? Greg Dowling, Managing Director at Credit Suisse First Boston, acknowledges that application vendors adhering to the specification may find the process difficult and demanding.

"But the benefits to those of us in the user community are substantial," notes Dowling, who helped draft the specification. "We are certainly going to use the specification as the basis for a standard for our internal developers. One of the things we certainly plan to do is include adherence to this specification as part of our software purchase criteria."

Another IT manager who helped Microsoft draft the specification is Matthew Parsons, of Pfizer Inc. Parsons, whose group deploys and supports both desktop and mobile network applications, says the specification accurately reflects, "on all the big items," the feedback developers gave Microsoft at the outset to maximize the business value of applications written to the specification.

> **"We use the Windows 2000 Application Specification as a valuable tool that we can use to evaluate software purchases. Applications that meet these specifications increase manageability and reduce our cost of ownership. We plan to incorporate compliance with this specification into our purchase criteria for new applications."**
> *—Tracy Futhey, Executive Director at Carnegie Mellon University*

Inside

5 Caere Corp.
Leaving the Paper Behind

6 Alibre Inc.
Through Thick and Thin

7 Executive Software International Inc.
Raising the Bar

9 Gemplus S.C.A.
Smart Solutions

10 Damgaard A/S
Future Proof

11 WRQ Inc.
Mirror, Mirror

12 PTC
Taking it With You

AN ELITE CLUB

The rigor of certifying applications in compliance with the application specification is not lost on software developers either. The high certification bar notwithstanding, Microsoft has seen significant momentum for certification in its early stages. That momentum is related to the ultimate user benefits of certification, which place the emphasis squarely on quality of the applications certified, not quantity. This is also what gives the Certified for Windows 2000 logo exceptional meaning, because it is proof that the application will exploit the rich features of Windows 2000 to the greatest possible extent.

"The certification process certainly is harder," reports Rajiv Agrawal, director/research & development, PTC, Waltham, Mass., a developer of design and engineering software. "It is a very rigorous process," confirms Andy Staffer, director/research, Executive Software International Inc., Glendale, Calif., the developer of Diskeeper, a disk defragmentation tool. While both developers agree that the Windows 2000 certification process is significantly more detailed and involved than previous certification programs, they also concur that this extra effort is just what is needed

Major IT Benefits Of Windows® Certified Applications

Here's how Windows® 2000-certified applications give users the most reliable and productive experience on the Windows 2000 platform

- Certified applications provide a uniform, standard and robust installation that is self-repairing and which minimizes conflicts among shared system components — the so-called "DLL hell." Certified applications use side-by-side DLLs and protect Windows 2000 system files. For example, if important application files and DLLs are accidentally deleted, desktop applications that are certified can repair themselves "on the fly."
- Certified applications use IntelliMirror™ technology to offer mobile or roaming users correctly maintained user preferences and computer settings. IntelliMirror technology also supports multiple users per machine and helps regenerate application settings when machines must be replaced. Administrators can install applications remotely, even on locked-down desktops
- Network administrators can secure and control corporate desktops while running Windows 2000-certified applications in a controlled network environment or in a lockdown setting. Since they are assured that certified applications will run in a lockdown setting, administrators can reduce TCO by locking-down desktops to reduce the chance of errors created by users
- For applications that are backward-certified on earlier platforms, Windows 2000-certified applications provide a seamless, controlled transition of the application for users who upgrade from previous versions of Windows to Windows 2000 Professional. Certification ensures compatibility among applications, the key to preserving the current IT investment.
- Support for OnNow power management in certified applications gives a PC the same instant availability that people expect from TVs and other common appliances, while reducing overall power consumption
- Windows 2000-certified applications lower their overall cost of ownership through a consistent user interface which reduces training, support and testing costs. These applications can also assist users with specific needs, such as creating custom dictionaries.
- Certified applications promote greater accessibility standards in that persons with disabilities can use compliant software more easily.

IT managers can find further information on these and other features and benefits of Windows 2000-certified applications at http //www microsoft.com/windows2000/upgrade/compat/certified asp

to give users applications that are optimized to the fullest for Windows 2000. For example, developers appreciate that the certification process ensures that a product behaves correctly in the Windows 2000 environment, such as by minimizing conflicts among shared components.

Both PTC and Executive Software are among the first vendors to earn the Certified for Windows 2000 logo for their packages (see related stories, pages 5-12).

IMPROVING IT's WORLD — ONE APPLICATION AT A TIME

"The specification is excellent," says Len Lamphar, systems programmer at Carnegie Mellon University, long recognized as a test cell and seedbed for major new information technologies. "We can take a package off the shelf, see that it has this [Certified for Windows 2000] logo on there, and know immediately it will perform correctly in an environment such as ours."

Noting that "DLL hell is a reality... that could make every software installation something of a magical event," Pfizer's Parsons applauds the Windows Installer feature for its "significant" time-, and therefore money-saving, attributes, as well as for its overall ability to allow him to deploy applications with far greater consistency and without costly rescripting

Parsons, who supports a far-flung user organization that includes many mobile professionals, also appreciates the built-in IntelliMirror™ management technologies that mirror systems, data and applications on a server. "Without IntelliMirror, we did a lot of custom coding to do what IntelliMirror does right out of the box," Parsons notes. "Now, for mobile users, we have custom roaming capabilities built right into the OS and the application "

GartnerGroup, renowned for its own tough brand of technology evaluations, noted that organizations using Windows 2000-certified applications will potentially increase the stability of their systems while lowering TCO through decreasing overall support, systems research, planning and product management, and user downtime In its 1999 Research Note "The Windows 2000 Logo: More Teeth Added," GartnerGroup's Michael Silver determined that users could reduce desktop TCO by 27 percent by using certified applications, primarily because certified applications can leverage the Zero Administration Windows features of Windows 2000 for user profile management and software distribution.

The bottom line, as seen by GartnerGroup, is that "Managers who want to take advantage of Windows 2000 features should encourage their developers to follow Microsoft's appli-

continued on page 8

This document is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS DOCUMENT
All rights reserved. Microsoft, Active Directory, IntelliMirror, Visual Basic, Windows and Windows NT, and the Windows and Certified for Windows logos are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

Each of the following seven companies markets desktop applications that have earned the Certified for Windows 2000 logo. Certification testing for server applications began in February, 2000. by Alan Radding

CAERE CORP. | As the first application certified for Windows® 2000 Professional, OmniPage Pro 10® delivers a host of new benefits to the OCR market.

LEAVING THE PAPER BEHIND

"WINDOWS® 2000 CERTIFICATION IS very important to us, a necessity in fact, to ensure our users that they will have no problems with our product," declares Natalie Miller, OmniPage Pro 10® product manager, Caere® Corp., Los Gatos, Calif. The company released OmniPage Pro 10 in October, 1999, and took it immediately for certification testing by VeriTest, the independent testing lab designated by Microsoft®. By mid- October, OmniPage Pro 10 became the first application certified for Windows 2000 Professional.

"OmniPage Pro 10 has proven its ability to be a premier Windows 2000-based application by passing the Certified for Windows 2000 requirement," declared Jim Allchin, senior vice president of Platforms, Microsoft Corp. "Rigorous testing has verified that OmniPage Pro® will be easy to deploy and manage in a Windows 2000 enterprise environment, providing features like self-repairing application, install-on-demand, and mobile features for power management and roaming users."

IMPROVED QUALITY

The extensive testing required for Windows 2000 certification has greatly improved the quality of Windows 2000-certified applications such as OmniPage Pro. For example, streamlined installation processes and system policies help corporations control deployment more effectively. Also, there is less chance for certified applications to conflict with each other, thereby increasing the reliability of the system, Miller reports.

The certification process also benefits mobile users. "The certification requires the applications to store user data under special folders [My Documents]. The folders can easily roam with the user. As a result, users are no longer tied to a single system, and they no longer have to customize each system separately as they desire," Miller continues. Also, key application data, such as user preferences, application state information, and temp files can be classified in various ways to support roaming and non-roaming users.

BEYOND THE PRINTED PAGE

Caere describes OmniPage Pro as the world's leading optical character recognition (OCR) application. It enables users to convert static, scanned images into dynamic, computer-editable text for use in word processing and other text-based applications. With a scanner and an OCR application, users can essentially eliminate retyping printed paper documents. OmniPage Pro includes a new OCR engine that produces the highest level of accuracy among significant desktop OCR applications. The latest version includes new and enhanced features for improved format retention, ease-of-use and robustness, including voice readback of OCR results. Also included with the product is OmniPage Web Personal Edition®, Caere's pioneering paper-to-Web solution.

At this early stage, having the Windows 2000 certification gives Caere bragging rights and conveys a certain "cool factor" notes Miller. The real value over the long term will come as customers, particularly large organizations, recognize that OmniPage Pro 10 will be easy to deploy on Windows 2000. "Customers see it as a Windows stamp of approval."✱

CAERE AND OMNIPAGE PRO ARE REGISTERED TRADEMARKS OF CAERE CORPORATION.

ALIBRE INC. | New features built in to Alibre Design™ take full advantage of the Windows® 2000 environment to help designers collaborate over the Web.

THROUGH HICK AND THIN

WHY IS A WEB BASED application service provider (ASP) sporting the Certified for Windows® 2000 logo? ASPs typically use thin clients, bulked-up temporarily by Java applets if necessary. But Alibre™ isn't a typical ASP. "We're a Web-based application, but we're not pure Java or a thin client. We use smart clients and benefit from a workstation-class computer on the desk," explains Paul Grayson, president/CEO, Alibre Inc., Richardson, Texas. The smart software Alibre requires on the Windows 2000 desktop is Windows 2000 certified.

BUILT TO SUIT

Alibre provides an architecture that benefits from the distributed nature of the Internet. Strategically aligned with Microsoft®, Alibre takes advantage of new technologies within Windows 2000, such as COM+ and the Active Directory™ Service. Alibre is also working closely with Microsoft to support Windows DNA (Distributed InterNet Applications Architecture) to foster design-team communication and data-sharing among engineers.

"Windows 2000 Server is more reliable and secure, and the Active Directory provides a secure framework to manage authentication of subscribers for our mechanical design service," Grayson continues. The result: Windows 2000 can scale to support any enterprise environment because it has the ability to upgrade servers and add processors to match the computational requirements of a given design project.

Alibre Design™, the company's Windows 2000 design solution, provides 3D solid modeling, which allows designers to create prototypes of products intended for manufacture. The company is aiming Alibre Design at small design and manufacturing shops. Users will run Alibre Design on a Windows 2000 Professional-based workstation and connect with the Alibre ASP site on the Web for additional services and for real-time collaboration. "Engineers can actually edit a CAD model in real time, not just view it or comment on it," Grayson notes. In addition, they can share data over the Web and manage dispersed teams.

ENGINEERING FROM THE GROUND UP

Although Windows 2000 certification is more demanding than previous certification efforts, the certification process has not hindered Alibre's development. "We have been working on this product for two years and took certification into consideration from early on. You don't want to wait until the end," says Grayson. The Windows 2000 certification requirements, he adds, "are like a roadmap to guide you in safe Windows[-based] development."

Specifically, the certification process significantly augments Alibre's internal quality assurance processes, due to

the extensive range of tests comprising the certification suite. Certification also ensures that Alibre Design will behave in the same way as any other certified application that a customer may be using, with no unwanted surprises. "The people who manage IT and users themselves will know what to expect when they use Alibre Design, and we are better able to support them since our application has been extensively tested," he explains.

IT organizations will also benefit from the new Windows 2000 install process. "Windows 2000 certification guarantees that the install and uninstall of Alibre Design conforms to the standards with no unexpected file replacement or deletion," explains Grayson. Windows 2000 Server also provides for centralized management and distribution of applications.

"Windows 2000 certification guarantees that the install and uninstall of Alibre Design conforms to the standards with no unexpected file replacement or deletion."
—Paul Grayson, president/CEO, Alibre Inc.

The Windows 2000 certification they have earned represents an important part of Alibre's strategy. "Our customers expect us to be Windows 2000 certified. It makes them feel comfortable," notes Grayson. IT and end users alike take comfort from the Windows and Microsoft Internet Explorer user interface conventions that are part of the certification specification, ensuring that Alibre Design is easy to use and intuitive. Similarly, certification guarantees that Alibre Design's functions in areas such as menus, number of mouse clicks, opening and closing the application, and other look-and-feel issues will be familiar to end users and to IT support. Finally, by conforming to the Windows 2000 standards for user accessibility, Alibre also made their product more accessible to customers with special needs ✱

All applications seeking to earn the Certified for Windows® 2000 logo must pass the strict certification test administered by VeriTest, the leading independent software testing company with offices in Los Angeles, Paris and Tokyo. VeriTest makes all test results publicly available, including exceptions granted in the testing process and the reasons for those exceptions. You can view the past results, as well as an updated list of certified applications or applications well on the road to certification, by going to http://www.microsoft.com/windows2000/upgrade/compat/certified.asp.

EXECUTIVE SOFTWARE INTERNATIONAL INC.|
Diskeeper 5.0 sets a new standard for disk defragmentation utilities.

RAISING THE BAR

IT TOOK SEVERAL days to complete Windows® 2000 certification testing for Diskeeper 5.0, the disk defragmentation utility from Executive Software International Inc., Glendale, Calif. By comparison, less rigorous logo compliance for its previous Windows releases took about a day, recalls Andy Staffer, director of research. "The Windows 2000 certification process has hundreds of pages of test procedures and is much more rigorous," he concludes.

A HELPING HAND

But the extra effort is worth it. By following the certification specification, Executive Software ensured that Diskeeper 5.0 works for disabled users, which helps organizations comply with various government mandates to accommodate employees with disabilities. Previous releases of Diskeeper had built-in support for disabled users, but it wasn't consistent. "Because of the certification process, we had to look at every dialog box and make sure it worked for disabled users," Staffer explains.

"We take Windows 2000 certification very seriously."
—Andy Staffer, director of research, Executive Software International Inc.

Executive Software found the certification concept of Advertisement another big advantage. Advertisement posts notification of an application's availability, even if the application's files have not been installed on the system. The advertised application can then be deployed, using software management tools. This is an important consideration for IT organizations faced with deploying an application like Diskeeper across hundreds, or thousands, of desktops. "Advertisement can save systems administrators a lot of work," notes Staffer.

Complying with the certification process also helped Executive Software produce a better product for mobile users, for whom power management is a critical concern. "We totally tapped into the Windows 2000 power

ANDREA MARQUIS

management capabilities," Staffer reports. Diskeeper requires considerable power to complete a full defragmentation. Working with Windows 2000, Diskeeper 5.0 recognizes when there isn't sufficient battery power to complete a task and shuts itself down, preventing potential problems.

CERTIFIABLY CONFIDENT

Achieving Windows 2000 certification is important to the company. "It gives our customers a feeling of confidence in the product. It is a sign that the product meets very stringent quality standards," says Staffer.

Microsoft® agrees. "We are delighted to recognize Diskeeper 5.0 as the first utility to pass our Certified for Windows 2000 program," said Deborah Willingham, vice president, Business Enterprise Division, Microsoft Corp., in a company announcement. "By ensuring that their solution is as reliable and manageable as possible, this certification validates Executive Software's reputation as a provider of premier utilities for the enterprise market."

Diskeeper 5.0 for Windows 2000 is backward-compatible with earlier versions of Diskeeper and features three major technological breakthroughs: Frag Guard, a fragmentation-prevention technology, automatic scheduling and network controls for mixed Windows 95/98 and Windows NT/Windows 2000 environments, and online directory consolidation.

Overall, Executive Software feels that Windows 2000 certification has raised the bar of software quality, which is a clear win for both IT and end users. Quality is so important, in fact, that the company incorporated certification requirements into the earliest designs for Diskeeper 5.0. "We take Windows 2000 certification very seriously," Staffer asserts. Next on the company's agenda is to certify its undelete product for Windows 2000. ✱

continued from page 4

cation specifications when developing new applications."

WHAT A WONDERFUL WORLD IT WOULD BE

Encouraging the use of certified applications is exactly what Greg Dowling of Credit Suisse First Boston is planning to do for his organization and its installed base of some 15,000 PCs worldwide. Of the many aspects of certified applications that appeal to him, one of the most appealing is the Windows Installer service, which ensures the quickest and easiest deployment of corporate applications.

At Credit Suisse First Boston, it is not unusual for IT to release 30 or more software modifications in a single week to support the very dynamic nature of the investment bank's core businesses. IT had to find a way to manage this chore while keeping the operating system stable, and without breaking the bank with numerous special modifications of each upgrade to ensure stability.

> **"[W a certified application] ow we can install it and it in our NT environment without trampling on the rest of the environment. So we feel quite strongly that we don't want to buy software that doesn't obey these standards."**
> *—Greg Dowling, Managing Director, Credit Suisse First Boston*

How well does Dowling anticipate the Windows Installer will work for him? "We look forward to a world where all applications are installed using the Windows Installer service, where all the problems we typically have today where applications are interfering with each other, and preventing each other from working properly, will go away," he says. "That's where we want to be." ✱

Bill Laberis is president of Bill Laberis Associates and former Editor in Chief of Computerworld.

GEMPLUS S.C.A. | Lowering training and support costs for users were top priorities for Gemplus as they pursued their goal of Windows 2000 certification.

SMART SOLUTIONS

Is there a smart card in your future? If you use a cellular phone, you probably have a smart card tucked into your phone now, or will in future. In 1999, Gemplus® made 500 million smart cards, which were used primarily in mobile telephones. And the numbers are only going up. The company is an independent hardware vendor, which builds Windows® 2000-certified software into its smart card products.

Gemplus® S.C.A., Redwood Shores, Calif., is the world's leading provider of plastic and smart card-based solutions, according to Dataquest. Founded in 1988, Gemplus has successfully implemented portable and secure smart card-based solutions to simplify a wide range of applications ranging from public and wireless communications to electronic business.

A SECURE FUTURE

For Windows 2000 users, smart cards will play a key role in network security. As network-based activities such as electronic business expand, the demand for a secure environment increases. In order to address these security demands, various network security systems have been developed based on a Public Key Infrastructure (PKI), which is considered the standard for secure distributed applications.

GemSAFE™ Enterprise, the company's Windows 2000 Professional-certified solution, addresses PKI security concerns by enhancing a corporate PKI implementation. GemSAFE Enterprise is a desktop solution that adds portability and ease-of-use to network security by tapping the inherent benefits of smart cards to provide more reliable authentication of the user. In addition, GemSAFE Enterprise sets the stage for future smart card applications beyond network security, explains Scott Smith, director/product management and marketing at Gemplus.

As a Windows 2000 product, GemSAFE Enterprise had to meet the demanding certification specification. "It required some extra work to meet all the requirements for install, uninstall, [and] power management, but it paid off," concludes Smith. For instance, the new remote installation and management capabilities built into GemSAFE Enterprise benefit system administrators. Similarly, self-repairing installations make the install process more reliable. Previously, Smith notes, problems resulted from incorrect and incomplete installs. "When users are using products with incomplete installations, who knows what will happen? Through certification, we eliminate this problem," he explains.

TCO: HOW LOW CAN YOU GO?

Certification has particularly improved the remote install process. "For administrators to install our components remotely is an important feature for us and helps us remove objections during the sales process," explains Smith. Certification addresses remote installs through the required MSI file, which describes how the product will be installed remotely. "This is important because GemSAFE™ Enterprise Workstation is supposed to run on the client, which often requires remote installation," he continues. Because of the remote installation capabilities of Windows 2000, a user can install Gemplus smart-card reader hardware while the software is installed and supported remotely by an administrator. This capability, he expects, will be very important to users and can save administration and IT time when adding new devices.

Windows 2000 Professional's power management is another benefit for Gemplus customers. GemSAFE Enterprise is a security application. IT managers need the reassurance that security will not be compromised when a machine goes into power-management mode. "The certification process ensures we support power management features and operate correctly," Smith reports.

"Certification means the software will be well-behaved, particularly in terms of correct and complete installation."
—Scott Smith, director/product management and marketing, Gemplus S.C.A.

Customers will benefit immediately from the consistency of behavior found in certified applications. "Certification means the software will be well-behaved, particularly in terms of correct and complete installation. It is not, however, a quality test. Quality is our responsibility," Smith insists. But the certification

specification, he adds, helps the internal quality assurance effort by providing another checklist and third-party testing.

Ultimately, both IT and users will benefit from GemSAFE Windows 2000 certification. Smith concludes: "By focusing on the certification process, we have added features to our product that help organizations lower cost of ownership through remote installation and a consistent look and feel, which reduces training and support costs." ✱

Certification Momentum

The following companies have applications that are well along the path to Windows 2000 certification:

- Agresso Group ASA
- Argent Software Inc.
- BMC Software Inc.
- Citrix Systems Inc.
- Damgaard A/S
- FastLane Technologies Inc.
- FileNET Corporation USA
- Geoplus S.C.A.
- Lane System Solutions
- Logility Inc.
- Mission Critical Software Inc.
- Motiva Software Corporation
- Navision Software A/S
- NetIQ Corporation
- Pivotal Corporation
- progress Systems Corporation
- Scala Business Solutions
- TIDAL Software
- Trend Micro Inc.
- VERITAS Software

DAMGAARD A/S | In the highly competitive world of ERP applications, Damgaard aims to be the top choice.

FUTURE PROOF

DAMGAARD A/S, Copenhagen, Denmark, needs the best product it can deliver if it is to thrive in its chosen market segment: the hotly contested enterprise resource planning (ERP) segment. By meeting the Windows® 2000 certification requirements, the company has been able to bolster AXAPTA®, its ERP solution for midsize companies, in several critical ways.

Damgaard's AXAPTA is designed for multinational companies that need a flexible way to standardize their worldwide operations. AXAPTA is an integrated enterprise solution covering finance, supply-chain management, customer relationships, logistics, project management and manufacturing — all of which can be accessed via the Internet, third-party products, or custom-built applications.

EYES ON THE PRIZE

Windows 2000 certification assures IT managers that AXAPTA will continue to support the industry's new directions in the future. Damgaard, which prides itself on staying on the cutting edge of technology, has closely followed Microsoft®'s lead in technology. "We see Microsoft as headed in the right direction for the future," explains Daniel Bévort, strategic alliance coordinator. Being the first ERP product to achieve Windows 2000 certification confirms the company's commitment to advanced technology and its confidence in the Microsoft strategy.

Among the other benefits of AXAPTA's Windows 2000 certification is that "the IT organization will gain from the standardized deployment provided through Windows 2000," notes Bévort. Although ERP solutions can be notoriously difficult to install, IT will experience a simplified, consistent AXAPTA installation that follows the stringent Windows 2000 install requirements. "The entire installation procedure is more consistent, stable, and controllable. Files, for example, can only be written to certain places," he adds. Because of its built-in support for Windows Active Directory™, IT will also gain from centralized management of the application.

Another benefit from Windows 2000 certification that will prove popular with IT and end users alike, Bévort continues, is the new standby mode. "This provides a very fast way to effectively shut down, and then bring back, the application," he explains. Previously, IT has absorbed the brunt of user complaints about slow shut-down and start-up.

Windows 2000 certification also means that IT will see results from correct maintenance of user preferences and computer settings for people who use several computers. It will also be easier for IT to support multiple users per computer. Windows 2000 certification standards allow AXAPTA to run in a tightly controlled network environment, which lets network administrators secure and manage corporate desktops. Finally, the consistent user interface and accessibility standards required by the certification standards reduce IT's support burden and lower training costs.

As a result of all these changes, Damgaard expects Windows 2000 certification to reduce the total cost of ownership for a product like AXAPTA. "The improved manageability and installation means that it will be much easier for IT to roll out the application to hundreds of users," Bévort says. Easier installation and manageability mean fewer IT resources are required, which translates directly into a lower cost of ownership of the product. ✱

AXAPTA IS A REGISTERED TRADEMARK OF DAMGAARD DEVELOPMENT A/S.

WRQ INC. | When your job is to show your customers what their computers have inside, you had better provide a clear picture.

IRROR, MIRRO

JOHN E. HOLLINGSWORTH

Sue Lindsey, WRQ Reflectio marketing mar

WINDOWS® 2000 certification was high on the WRQ agenda. The Seattle, Wash.-based company provides Windows®-based terminal emulation software, WRQ Reflection®, which allows Windows-based desktops to connect to mainframes. The software runs on Windows 95, Windows 98, Windows NT®, and now on Windows 2000. "We offer connectivity software, and our customers expect that it will work right," says Sue Lindsey, WRQ Reflection marketing manager. Certification helps ensure that it will.

WRQ Inc. customers use WRQ Reflection to provide connectivity between PC desktops and host systems such as IBM mainframes and AS/400s, HP 3000, UNIX, OpenVMS, and Xsystems. Windows 2000 certification reassures IT managers that the WRQ product will behave properly in the Windows 2000 environment as it delivers reliable terminal emulation and connectivity between the PC desktops and their host systems.

RELIABILITY AND MANAGEABILITY

By meeting the Windows 2000 certification specification, WRQ was able to add features that both Windows users and IT recognize and appreciate. For example, by using the Microsoft® Windows Installer within WRQ Reflection, the company was able to create an installation program that is easily recognizable to many Windows users. The benefits of consistency go beyond familiarity: they allow WRQ to deliver a product that does not require additional training for users, resulting in a lower total cost of ownership of the product.

Microsoft also recognizes the importance of WRQ's host connectivity. "Organizations want to know that their Windows 2000 environment will be interoperable with their current host systems," says Deborah Willingham, vice president, Business Enterprise Division, Microsoft Corp., commenting on WRQ's Windows 2000 certification. "WRQ has acted quickly to take advantage of the great technologies in Windows 2000. WRQ Reflection has passed the Certified for Windows 2000 Specification, and our joint customers can be assured of a reliable, manageable solution."

WRQ Reflection for HP 8.0 host access software, which will ship in February, 2000, is the first product in the WRQ Reflection® 8.0 suite to receive the Windows 2000 certification. WRQ Reflection 8.0 includes the Active Directory™ Service, Windows Installer, fully integrated Visual Basic® for Applications (VBA) 6.0, and centralized management tools. WRQ Reflection 8.0 will also support previous versions of Windows including Windows NT 4.0, Windows 98 and Windows 95. This means users can access mission-critical information

"We offer connectivity software, and our customers expect that it will work right."
—Sue Lindsey, WRQ Reflection marketing manager

stored on host systems from all Windows operating systems, according to WRQ

MORE THAN A PRETTY FACE

Terminal-emulation, or host-access, software may not be the most glamorous application, but it is vitally important, Lindsey explains. Using a Windows 2000-certified product such as WRQ Reflection means that IT can be confident that the terminal emulation product on the PC desktop will behave properly, allowing IT to concentrate on back-end systems.

In the fast-moving connectivity market, being first-to-market with a new feature, especially one as significant as Windows 2000 certification, is an advantage. Customers and IT will appreciate the extra attention to detail, such as easy install and remote management, which certification represents. They will also benefit from the third-party testing and independent assessment that augments the normal quality-assurance work routinely performed by WRQ. "The certification," Lindsey concludes, "gives IT and end users a clear sign that WRQ has done the work necessary to ensure our products will work as expected." ✱

WORLD SMART Solutions

Director
JILL NIGHTINGALE
Customer Service Manager
JULIA REID
Project Manager
BILL LABERIS ASSOCIATES
www.laberis.com
Design
BONNI CAMPISI DESIGN, BOSTON
Managing Editor
BESS DECK
Production
DEBRA GUILFOYLE/CHRIS GUIO
View online at
http://marketing.infoworld.com/supplements/
© 2000 InfoWorld Smart Solutions Team

PTC | Enhanced mobility and simplified management are key components in PTC's Pro/DESKTOP™ 2000.

TAKING IT WITH YOU

FACED WITH A CLEAR shift to Microsoft® Windows® among its customer base, PTC, based in Waltham, Mass., regards Windows® 2000 certification as a must-have requirement. "It is viewed as a sign that the product has a certain level of quality," explains Dan Starr, PTC director of strategic marketing. Certification gives both IT and end users a greater level of comfort. They are reassured through the certification program's independent testing that the product has met stringent requirements.

ENHANCED DESIGN

PTC's first Windows 2000-certified product is Pro/DESKTOP™ 2000, a tool that enables conceptual engineers to capture ideas rapidly and to explore design possibilities. With Pro/DESKTOP, engineers can start work in 2D and the corresponding 3D design transparently evolves, while automatically leveraging 100 percent of the design intent. Conceptual designs created with Pro/DESKTOP are then passed to Pro/ENGINEER®. Pro/ENGINEER is the de facto standard for mechanical design automation and is based on PTC's parametric, feature-based, fully associative architecture.

By meeting the Windows 2000 certification standard, PTC has enhanced Pro/DESKTOP in a number of ways that directly benefit both the IT organization and end users. For example, the Windows 2000 Installer provides a robust self-repairing installation process, "enabling Pro/DESKTOP applications to be more reliably installed on workstations, PCs, and notebooks that already have many other previously installed applications," notes Starr. This ensures that IT will be able to deploy the application easily and efficiently on dozens, even hundreds, of desktops, allowing the organization to collect direct input from more people during product development.

BOOSTING PRODUCTIVITY

Specifically, the new Windows 2000 installation requirements specify how applications must treat shared software components, such as Dynamic Link Libraries (DLL). Since Pro/DESKTOP meets the new installation requirements, IT managers are assured that installing Pro/DESKTOP will not create problems with previously installed software, Starr adds.

Similarly, the Multiple Monitor support in Windows 2000 also provides needed support for new hardware, enabling engineers to more easily visualize large complex designs in Pro/DESKTOP. This will increase designer productivity, ultimately boosting the organization's return on its investment in Pro/DESKTOP.

Finally, Windows 2000 improvements to power management and plug-n-play "promise to make mobile platforms more practical for both Pro/DESKTOP and Pro/ENGINEER," Starr continues. Engineers and designers will no longer be restricted to working at their desktops, but will be able to run their design tools on a laptop anywhere, making them more productive.

The easy installation and enhanced mobility achieved through Windows 2000 certification create that many more opportunities to extend the design process to more people in more places. For Pro/DESKTOP 2000 users, Windows 2000 certification means easier deployment, greater manageability, and higher productivity. ✱

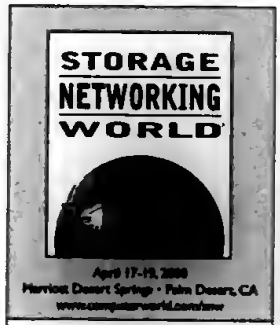
Alan Radding is a technology writer based in Newton, Mass.

STORAGE NETWORKING WORLD

Storage Networking promises to change the way user companies deploy their storage and networking solutions. To prepare for this journey, IT Leaders from corporations nationwide along with industry storage networking professionals will join their peers, thought leaders and key solution providers at the Storage Networking World® Conference and Expo, April 17-19, 2000 in Palm Desert, CA!

Get on the Fast Track With the Leaders

With three jam-packed days in April, you can help set your company strategy for the future. In this unique industry and corporate IT user conference, you will have the opportunity to network with hundreds of your peers and storage networking professionals and hear and see the latest technology developments, deployments and a vision for the future. Don't miss the opportunity to develop key industry relationships as Storage Networking heats up!



A complete conference and expo program will include:

- User and Industry Keynotes
- Town Meetings
- Dynamic Panels
- Interoperability Lab
- Expo with Reception and Dinner
- All Meals and Receptions Included
- Optional Technical Tutorial
- Optional Networking: Golf / Spa activities

For more information, or to register, visit www.computerworld.com/snw

Platinum Sponsors: bmc, Compaq StorageWorks, EMC², HITACHI DATA SYSTEMS, HP, StorageTek, Sun, VERITAS, Hitachi

Gold Sponsors: adic, Network Appliance, searchstorage.com, StorageNetworks

Additional Sponsors: Ancor, Brocade, gadzoox, LEGATO, TROIKA

STORAGE NETWORKING WORLD

"The Storage Networking World conference gave me some great insight and new information to bring back to my company as we move toward the creation of a switched SAN environment. I would recommend this conference to anyone implementing SAN technology."
DARREL OWEN
Director,
Platform Engineering
The Associates

"This is the event to attend in order to understand the true state of the art and future outlook of SAN technology."
BARRY BARRETT
Fibre Channel RAS Engineer
IBM

"SNW was an ideal opportunity to meet with vendors and customers of Storage Networking products while also getting an update and education on current storage networking technology and SAN futures."
MICHAEL FRENHAM
Manager, Clusters Engineering
Data General Corporation,
a division of EMC Corporation

"Storage Networking is about bringing different worlds together for mutual benefit. The Storage Networking World conference is a great venue to demonstrate to IT user customers that vendors can cooperate (to ensure interoperability) and compete (to add value) at the same time."
MIKE BUTCH
Director
Hitachi Data Systems

"The Storage Networking World conference was a must-attend event for anybody in the storage world. The world's premier suppliers and IT user customers attend this event and it is a fantastic opportunity to network with peers and possible allies. There is no other forum that comprehensively gathers all the appropriate players of the storage future."
CHRISTOPHER STANLEY
VP, Engineering & CTO
EMC

Co-owned & sponsored by: COMPUTERWORLD, SNIA

Manufacturers Make E-Business Leap of Faith

Old-style firms push Internet attitude to help managers adapt to Web business

BY JAIKUMAR VIJAYAN

Information technology managers at old-line manufacturing firms are scrambling to get their companies to think like fast-moving Internet players.

Take Eastman Chemical Co. in Kingsport, Tenn., for example. It has launched a twofold strategy aimed at extending its existing businesses to the Web, in addition to tapping new online opportunities via dot-com partnerships, said Fred A. Buehler, director of Eastman's e-commerce operations.

The firm is taking a series of steps to make sure that its strategy gets across to the people who matter. Those steps include the following:

- Inviting speakers from other companies — including dot-coms — to talk about their Internet strategies.
- Walking company managers through real-time online auctions on business-to-business portal sites to give them an idea of how they work.
- Holding e-commerce workshops and education programs for business unit managers and business groups within the company to educate staff about key aspects of Web-enabling the business.
- Setting up a separate electronic-ventures unit focused on partnerships, including the recent launch of an Internet-based transportation management service for manufacturers and distributors of chemicals and plastics, in collaboration with Global Logistics Technology Inc., a logistics software start-up in Shelton, Conn.

> [The idea has been] let's do something, let's go fast and it's OK to make mistakes.
>
> KATHERINE HUDSON, CEO, BRADY CORP.

In this environment, "no failure is bad. If we are going to innovate, there are going to be failures.... Repeating them would be bad," Buehler said.

Not Waiting for Change

The goal should be to "just move," echoed Stewart McCutchean, director of electronic-business technology at Du Pont Co. in Wilmington, Del. "You can't steer a car that's not moving."

Like Eastman Chemical, Du Pont has set up a separate electronic-ventures unit, which has made deals such as a partnership with ImproveNet Inc., a Redwood City, Calif., business portal for buying construction materials.

Katherine Hudson, CEO of Milwaukee-based Brady Corp., calls her strategy DAMAGE — an acronym for develop, accelerate, make mistakes, act, globalize and engage.

For more than a year, Hudson has used the program and the attitude behind it as a rallying cry to help quickly organize the $500 million, old-line industrial sign-making company for the new world of e-commerce.

During that time, the focus has been as much on extending Brady's traditional business through new Web development activities as it has been on getting people within the firm to think Internet first. For example, Brady is encouraging each of its nearly 2,800 employees worldwide to design and post their own Web sites on the company intranet within the next two years.

Already Brady has converted much of its catalog business to the Web, set up an online support network for distributors and launched a fee-based service that lets users custom design posters from the Brady Web site.

The company's idea has been: "Let's do something, let's go fast and it's OK to make mistakes," Hudson said.

KEVIN FOGARTY/BRICKS AND CLICKS

Strategies ruled by fear

HOW MUCH of your e-commerce strategy is driven by fear? A friend of mine works in a top-flight financial services company. Lots of history, lots of infrastructure. A sophisticated, tough-minded, aggressive place that sells specialized info to investment banks and other uber-traders, using expensive proprietary computers and networks.

It's obvious to everyone from the CEO to the janitor that the Web is pushing them toward a lower-cost distribution system that reaches out to a wider swath of customers.

But middle managers aren't willing to put their huge bonuses at risk by launching e-commerce efforts that could hurt their divisional P&L. Staffers can't make themselves heard. Top managers are distracted by politics and hidebound tradition, and by uncertainty about what would happen if they changed the business model.

They're paralyzed, afraid to do more than dip their toes into the e-commerce waters, even knowing that if they don't at least paddle around a bit, the rising flood will eventually drown them.

That's a new kind of fear for many companies — and for many IT people.

IT people used to worry about whether they'd get fired for buying or building the wrong system. That the system would be too hard to use or wouldn't work at all.

That's a healthy fear. It's the kind that keeps us from walking on building parapets, leaping into traffic without looking or committing ourselves to a presidential candidate based on a sound bite.

But there's a new kind of fear among the technologists at major companies. It's an immobilizing, intoxicating, judgment-impairing terror that has become worse because its source is something over which IT has little control — their company's e-commerce strategy and whether the Web will enhance their careers or destroy them.

KEVIN FOGARTY is Computerworld's business editor. Contact him at kevin_fogarty@computerworld.com.

It's the desperate fear of being left behind in a world that's changing forever, but not being able to figure out how to change with it. Or worse, knowing how to change but being unable to convince anyone that you are right.

That fear can work for you. It can be a great motivator. It's fueled the rise of Microsoft and Intel, among others. Fear of being overwhelmed has driven Amazon's Jeff Bezos into burning hundreds of millions just trying to grow big enough to survive.

But fear is only an advantage if it doesn't control you — just as e-commerce gives your company leverage only if it's accomplishing what the business really needs.

Paul Charron, the no-nonsense chief executive of Liz Claiborne, fears the hit he'd take from shareholders and Wall Street if he spent millions on an e-commerce site that might only alienate his resellers without significantly improving revenue ["CEO: Blind Rush to E-Commerce Is Foolish," Business, Feb. 21].

So he's stepping carefully along the stony bottom, wading into e-commerce by partnering with his existing retailers, experimenting with online sales of the Lucky Brand of jeans (so as not to expose his premium brands to risky new ventures) and testing other commercial strategies.

Meanwhile, Charron is spending the $10 million or so that Liz Claiborne could have blown on a consumer site to build a new brand he expects will bring in $300 million in new revenue in three years — which a Web site wouldn't.

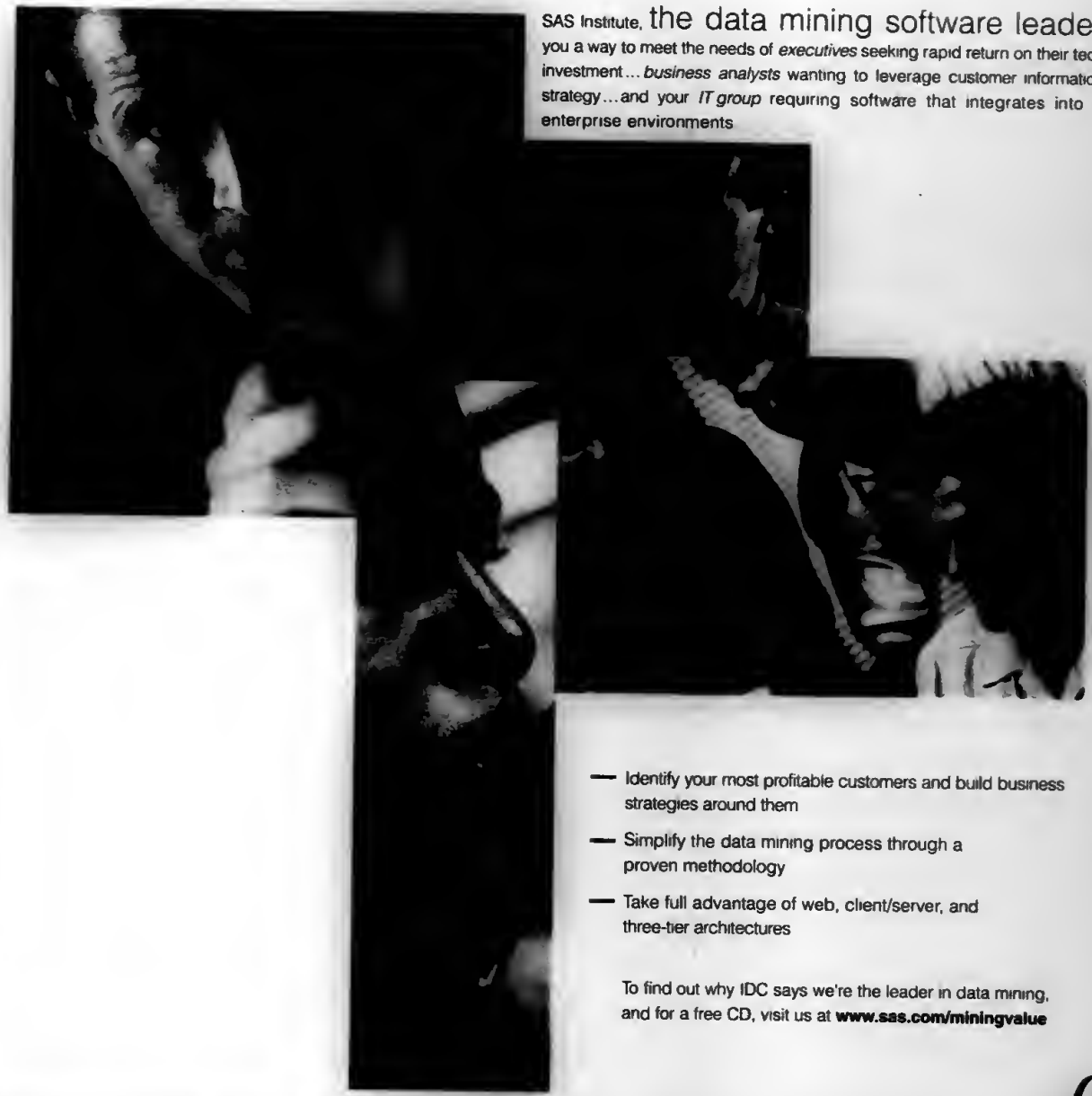
That's a rational response to fear. Not panicky spending, not terrified paralysis, not a desperate attempt to shed an existing identity to become a dot-com.

Just a savvy way for a company to become a more effective version of itself using fear as a motivator, rather than letting it make all the decisions.

End your IT Struggle

With Enterprise Miner™...

data mining software that works for everyone you work with



SAS Institute, the data mining software leader,* gives you a way to meet the needs of *executives* seeking rapid return on their technology investment... *business analysts* wanting to leverage customer information to set strategy... and your *IT group* requiring software that integrates into existing enterprise environments

- Identify your most profitable customers and build business strategies around them
- Simplify the data mining process through a proven methodology
- Take full advantage of web, client/server, and three-tier architectures

To find out why IDC says we're the leader in data mining, and for a free CD, visit us at **www.sas.com/miningvalue**

The Business of Better Decision Making

SAS Institute

In Canada phone 1 877 SAS INST (1 877 727 4678). SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc. in the USA and other countries. ® indicates USA registration. Other brand and product names are trademarks of their respective companies.
* Based on 1998 worldwide revenues. see www.idc.com, report #19130. Copyright © 1999 by SAS Institute Inc. 39984_0899

WORKSTYLES

What It's Like to Work at . . . The Sierra Club

Interviewee: Dave Simon, director of information and communications systems
Company: The Sierra Club, a nonprofit environmental conservation and activist organization (*www.sierraclub.org*)
Main location: San Francisco
Tenure: Just over eight years
Number of information technology employees: 12
Number of end users: 300 employees, plus several thousand volunteers supported with e-mail lists, local Web sites, Web-accessible membership databases and more.

As a nonprofit organization, what IT salary challenges do you face? "Typically, our salaries [have been] 10% to 20% below the market average. With the dot-com thing sending local salaries through the roof, it's terribly difficult to get people. We have a junior network administration job open now that pays in the $30s, and I put the salary in our ad. I only got one résumé."
What motivates IT people to work here? "I think people come to work here because they believe in the organization, but also because we're doing a lot of exciting things technically. For example, we were doing commerce on the Web in 1996, we have wide-area links, we just implemented a PeopleSoft financial system. We're not the IT backwater that you might think of in a nonprofit."
What motivates you? "I think I'm making a difference. I have an idealistic streak – I was in the Peace Corps, and I have kids who I want to grow up in a natural world."
Major Web initiatives: "Timekeeping systems for tracking hours spent on conservation work, which are critical because since our activities are funded by grants, the government requires scrupulous tracking of how we spend our time; a membership information system to provide information about club members to our local leaders; an up-to-the-minute trip reservation system."
The one thing everyone complains about: "I would say that even here there's a little dot-com envy going on. I've had people leave because they got offered 60% more money at a dot-com."
Turnover rate: "About 20%, about the same as the IT average."
Workday: "Pretty much 9 a.m. to 5 p.m., which is one of the perks for putting up with a lower salary in a no-profit."
Kind of offices: "We're the anchor tenant in a beautiful eight-story, turn-of-the-century building that's now being surrounded by high-rises. We have three floors with 12-ft.-high ceilings. Managers have the interior offices, and the staff has cubicles next to the windows, which are easily 8 feet tall. We have all hand-me-down, mismatched office furniture."
What do you see in people's cubicles? "A lot of Sierra Club posters and calendars. Someone used to have a little coffin that had a copy of CC:Mail with a stake through it that one of our volunteers sent to us."
Favorite part of the job: "It sounds really hokey, but feeling that I'm working toward something that makes a difference. In many of our conservation battles, the timely delivery of information plays a significant contributing role – like being able to generate several thousand e-mails from our Web site, or being able to provide a local phone list for activists to call people about a key bill – and that's a good feeling."
Little perks: "Free Sierra Club calendars. We can go on Sierra Club backpacking trips for reduced rates. And having the privilege to work with Dr. Edgar Wayburn. He just won the Presidential Medal of Freedom award for creating the Golden Gate National Recreation Area. He's in his 90s now, and to have had the office next to his, and get him batteries for his hearing aid and fix his Dictaphone – that's been a great perk."
Quote: "We're doing a lot of exciting technical projects for a cause that we believe in. There's a collegial atmosphere, and the hours aren't bad." – *Leslie Goff*

JIM CHAMPY

Style-ish marriages

IF STEVE CASE AND JERRY LEVIN weren't such good executives, I would fear for their corporate survival. Shortly after last month's announcement of the AOL/Time Warner merger, they were touted on one magazine cover as "Men of the Century." Such praise can often lead managers to believe they're infallible. Business troubles often follow.

The AOL/Time Warner deal is sound. Case and Levin should be admired for their courage. But as good managers, they know their vision of a New Age media company will take lots of work, and the accolades may be premature. But Case and Levin are also good examples of creator and capitalizer, respectively. They are two of the archetypes of technology managers I've run across.

A creator is a true innovator who pioneers a new technology to the point of making current technologies obsolete. Case has certainly been doing that in communications. He has made the Internet accessible to and affordable for millions, replacing other forms of communications technologies.

A capitalizer is a manager who markets a technology so energetically that a whole new infrastructure is required to accommodate its distribution. Some may argue that Levin is in the media and entertainment business rather than in technology, but the lines between media and technology are blurring. And there's no argument that Levin has marketed his media capabilities so energetically that Time Warner can now benefit from AOL's Internet-based distribution system.

Imagine the power of creators, capitalizers and consolidators working together.

A creator is sometimes also seen as an undisciplined inventor/entrepreneur. A capitalizer is expected to bring discipline to the venture. But what is also valuable about the Case/Levin management team is that there is some inventiveness and discipline in both parties. Case is certainly disciplined as a manager. And Levin has a creative side.

The complementary natures of such managers are what often build a great technology company. Hewlett and Packard, and Gates and Ballmer, are other examples of complementary teams.

But technology companies must be aware of the third managerial archetype: the consolidator. Consolidators are often called in to make technologies work consistently and profitably in corporate settings. But often, consolidators can begin to look inward to their own corporate cultures as they try to fix their companies. When that occurs, the company can miss what's happening with changing customer needs. And the creative and subversive impulses that brought forth new technologies can be lost.

Maybe that's what happened with Apple Computer, when, after Steve Jobs' first tenure, the company went through a succession of well-intentioned consolidators who served as CEO. With Jobs now back at the helm, Apple seems to be regaining its inventive spirit. After all, Jobs is the quintessential creator.

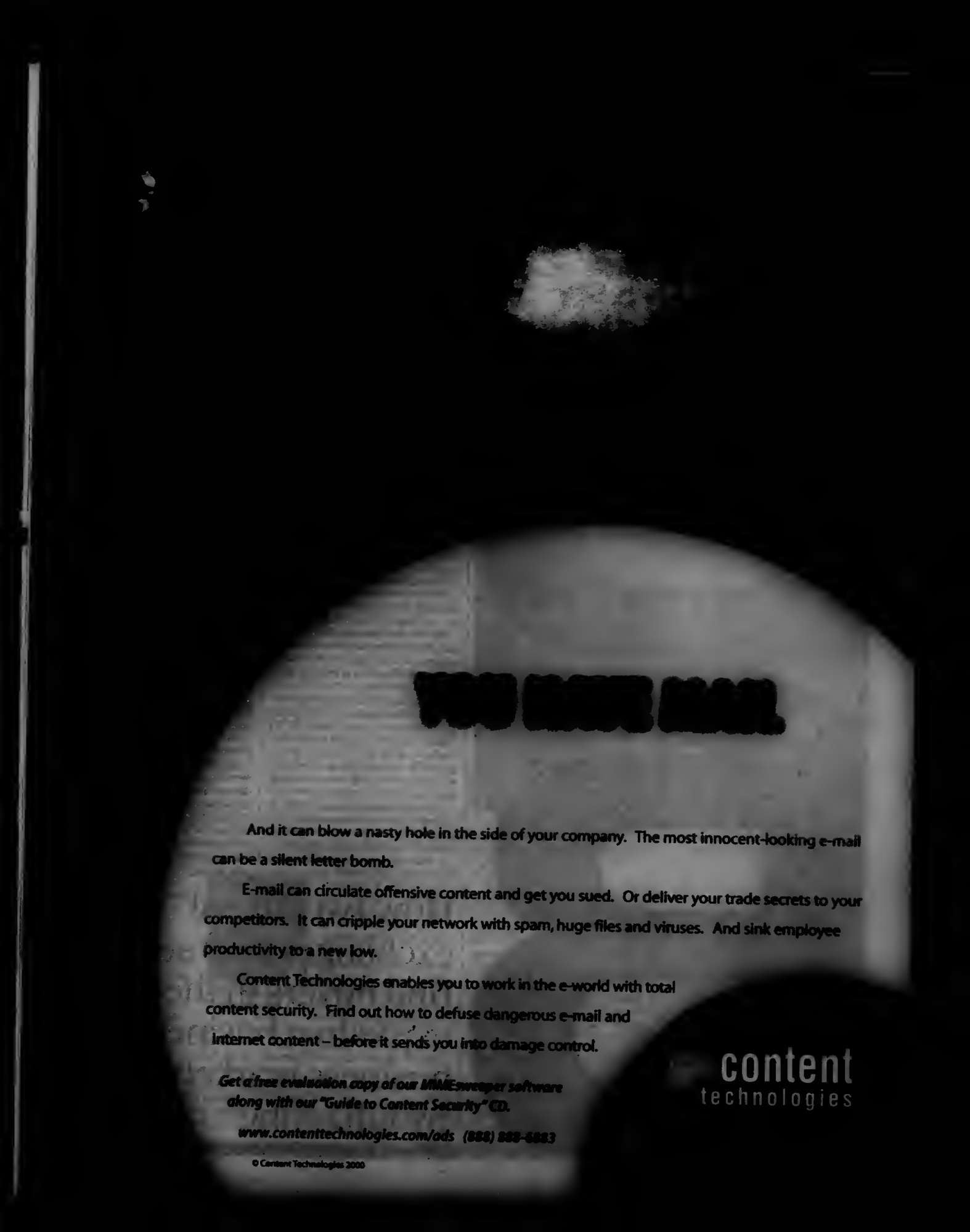
Is one of these managerial types better than the other? Not necessarily. There are times in the growth and development of a technology company when a certain dominant managerial style is more appropriate — a creator at the launch, a capitalizer as the company grows and a consolidator to make everything work with scale. But the truth is that a company needs some of each style all the time. When a technology company loses its creative capability, it's at risk, and without discipline, it can't deliver. We have also learned that from the Apple experience.

Ideally, a corporate culture can tolerate all three management styles at the same time. Imagine the power of creators, capitalizers and consolidators working together. I sometimes wonder whether that's the secret behind what Michael Dell and Andy Grove have achieved at their companies, both of which seem limitless in their growth.

And what happens if a technology company is in trouble and a board of directors decides to give control to a consolidator? Is that what happened at Digital when Robert Palmer became its CEO in 1992?

It may mean that a company is near the end of its corporate life, but then the opportunity is opened up for the cycle to begin anew. Every managerial type serves a purpose.

Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. He can be reached at JimChampy@ps.net. His newspaper columns are syndicated by Tribune Media Services.


[redacted]
And it can blow a nasty hole in the side of your company. The most innocent-looking e-mail can be a silent letter bomb.
E-mail can circulate offensive content and get you sued. Or deliver your trade secrets to your competitors. It can cripple your network with spam, huge files and viruses. And sink employee productivity to a new low.
Content Technologies enables you to work in the e-world with total content security. Find out how to defuse dangerous e-mail and Internet content – before it sends you into damage control.
Get a free evaluation copy of our MIMEsweeper software along with our "Guide to Content Security" CD.
www.contenttechnologies.com/ads (888) 888-6883
© Content Technologies 2000
content
technologies

How to Do B2B

How two digital exchanges help sellers find buyers in the exploding business-to-business marketplace.

By Julia King

ANALYSTS' FORECASTS may vary by billions of dollars, but they all point to the same thing: an enormous business-to-business e-commerce market.

Forrester Research Inc. in Cambridge, Mass., pegs last year's business-to-business Internet trade at $109 billion. It expects that figure to reach $2.7 trillion by 2004. Gartner Group Inc. in Stamford, Conn., also predicts skyrocketing growth, from $145 billion last year to $7.29 trillion worldwide by 2004.

Analysts expect the bulk of this trade to take place on vertical industry exchanges, the online trading communities where multiple buyers and sellers come together to buy, sell and conduct a wide range of other activities, from posting requests for proposals and comparing pricing to auctioning off excess inventory.

In the past few months alone, the number of these trading communities has nearly doubled — from about 200 to 400 — according to Vernon Keenan, founder of San Francisco-based Internet consultancy Keenan Vision Inc.

"We're seeing a general movement [toward exchanges] in every industry you can think of," Keenan says.

For now, the great majority of these exchanges are busy wooing buyers and sellers in the new digital marketplaces. But before long, wooing won't be necessary, analysts say.

"Economic factors will compel everyhody to participate," says Keenan. Those who don't, as well as latecomers, "will be wounded in their economic underbellies," not unlike the mom-and-pop hardware stores that went belly-up with tbe advent of mega-home improvement stores.

But not all exchanges operate the same way. Some link buyers with sellers, while others operate with a middleman at the center of the process. Still others offer auction capabilities. Some charge only sellers, while others provide users with the information technology infrastructure, software and implementation services to get up and running on their exchanges.

Here's a look at two exchanges with different approaches.

The Seller's Agent: Medibuy.com

Business-to-business e-commerce isn't new to Buffalo Hospital Supply Co. For more than a decade, the $50 million, Buffalo, N.Y.-based distributor has been using electronic data interchange (EDI) to buy and then sell its line of health care products and equipment, primarily to hospitals and long-term-care nursing homes in New York and Pennsylvania.

But now, the company is taking a giant step onto the Internet. After being courted by at least a half-dozen online exchanges that cater to the $100 billion-plus medical supplies market, the distributor is making its product catalog available online via Medibuy.com Inc., a San Diego-based business-to-business health care exchange.

"What Medibuy allows us to do is put our catalog on their site for anybody to use. It tears down the geographic barriers and makes us much more of a global company," says Buffalo Hospital Supply CEO Gary Skura. "It also lets us branch out to sell beyond hospitals and nursing homes."

Since November, when the medical supplier established a Medibuy.com beta site, only a few new orders have trickled in from the exchange. But Skura says he isn't worried. He's still ahead of the competition. "We've done more [on the Internet] than most distributors have done," he says.

"It's still the early adopters and pioneers who are doing this stuff," says Gartner analyst Mike Davis. In general, Davis notes, health care companies are slow to adopt new technologies. But in three to five years, he says, business will be thriving on the digital exchanges, which have the potential to pare industry transaction costs of $24

to $100 per order today to between $5 and $10. Eventually, those numbers should drop to less than $1 per order, Davis says.

Meanwhile, as a beta site, Buffalo Hospital Supply hasn't spent a nickel on technology or professional services to begin selling its products on the Internet. Medibuy.com has done all the systems integration work, including customizing contract pricing data for Buffalo's various customers. Before it signed on with Medibuy.com, Buffalo Hospital Supply had been developing its own Web site. But it dropped the project in favor of moving to the Internet via the industry exchange.

The company's customers can also access real-time availability and shipping information because the Medibuy.com site transparently connects customers to the supplier's in-house enterprise systems.

"We have seamless integration, so the buyer doesn't feel they have left the Medibuy site, but they're actually using the [supplier's] price files. The advantage of that is the likelihood of much higher accuracy," says Robert Witt, chief technology officer at Medibuy.com.

Medibuy.com also does much of the systems integration work necessary to hook up buyers and suppliers to the Web site. "We have a very robust implementation methodology, under which we send in an integration manager with a series of tools that identifies which suppliers a hospital needs to deal with to conduct business," Witt explains. Because it has this information, Medibuy.com also knows what kind of traffic volumes to anticipate, and that helps with its own planning of network and Web site capacity, he says.

Buyers need only minimal IT expertise. Medibuy.com provides a turnkey service "where buyers can come onto our site with very little in the way of internal systems to support their work [online]. We'll provide them access to the Internet through our business intelligence systems, and we'll also provide them with all the reports they need," Witt says.

Medibuy.com also furnishes the buyers with detailed monthly reports of all of their purchasing activity. This can pinpoint high-volume suppliers, which hospitals can then target as candidates for contract renegotiation.

Now, in contrast, hospitals "often won't realize the number of times their own [purchasing group] goes off [prenegotiated] contracts for the same items," notes Witt. "This way, they can aggregate their buying potential and go out and negotiate better contracts."

Medibuy.com's pricing model calls for free use by buyers, while suppliers like Buffalo Hospital Supply pay a transaction fee of less than 1% of the total for each order that comes in over the exchange. One of the biggest ways a supplier can recoup these costs is in the significant savings achieved by processing orders electronically, rather than by phone or fax.

But pricing is also where things may get sticky. Skura, for example, says he's willing to pay a fee for new business that comes in via the Web site, but he doesn't want to ante up for Web-based orders from existing customers who now use EDI (about 55% to 60% of Buffalo's incoming orders) or do business with the company manually.

"I'm not keen on giving [Medibuy.com] money for that," Skura says. "We're still negotiating."

Grain Middleman: AgriPlace.com

The Internet may be global, but AgriPlace.com is using it to create regional networks of grain buyers and sellers with a traditional twist: middlemen.

Rather than cut out brokers and link buyers and sellers directly, Calgary, Alberta-based AgriPlace.com has positioned them as service providers. Grain brokers, who sell on behalf of farmers, continue to match buyers with sellers, arrange for transporting crops and help set up credit terms. What's different is that they carry out these tasks on the Internet at a central digital marketplace, rather than by phone or fax.

"If there's 500 tons of barley, and the farmer wants $75 a ton for it, we can put that [on AgriPlace.com], and it goes out to more than 100 buyers," says Blair Pfeil, a trader at Western Commodities Trading Inc., a grain broker and AgriPlace.com beta site in Spalding, Saskatchewan. The advantage here: Brokers can more quickly reach a wider audience of potential buyers.

GREG LORE: Farmers value middlemen

"Instead of phoning up every one of them to see if they want to buy this 500 tons, it goes out on-screen, and everybody can see it. And they all get a chance to bid on it," he says.

It wasn't always this way. In its debut — as an online trading exchange called Agrilink — buyers and farmers could do business online directly. But they didn't.

"The technology was built with the view that you could displace the middleman, but the strategy was not largely successful," says AgriPlace.com President Greg Lore.

The reason had to do with one of the market's most critical players: the farmers themselves. They value long-standing relationships and weren't willing to sell their crops without a broker's guidance, Lore says.

"We find that computers scare most producers, except the younger ones," says Pfeil. "They don't want to use computers to do business. They want to have a one-to-one relationship, which is a big thing. They want to put a name and a face together."

So AgriPlace.com reworked its strategy and last year launched a site that includes brokers, who use the exchange to contact a broader group of buyers whom they can reach via phone or fax.

Here's how it works: Brokers post a list of available crops on the exchange for buyers to view. Once a bid is placed and accepted, AgriPlace.com immediately executes the transaction online and then collects a percentage of each deal — between 0.25% and 1.25% of the value of the commodity.

Since its beta-test launch in September, AgriPlace.com has hosted trades totaling more than 2.5 million bushels of grain. The exchange has signed up three brokerages and about 600 farmers so far. Compared with other industries, that's a slow start on the Internet, analysts say. But looking ahead, the pace is sure to pick up rapidly, as younger, more technology-savvy farmers take over family-run operations.

"The average age of farmers today is close to 50 years old. This is a person who isn't likely to trust his entire livelihood to somebody he has no idea of on the other [side of] a screen," says Shawn McCambridge, a grain analyst at Prudential Securities Inc. in Chicago.

It won't be until the next generation comes up that farmers will be likely "to grasp all of the efficiencies of the new [Internet] technologies," he says.

MEDIBUY.COM [illegible] Chief Technology Officer Robert Witt says it's also easy for buyers to use the online exchange

WEB-IFYING YOUR STAFF

To help build a great Web site, IT pros need more than technical smarts. Here's how you and your people can ramp up quickly on the softer skills that you need for a strong Web presence.

By Johanna Ambrosio

THANKS TO the Web-heads at Galileo International Inc., the company has an equity position in, and a great new business relationship with, Stamps.com Inc., an electronic-postage provider in Santa Monica, Calif. The deal allows Galileo to offer its 40,000 travel agency clients and other customers the ability to use the Web to print out postage and more easily send and receive the vast number of airplane tickets they handle daily.

Galileo's information technology staffers first spotted the Internet startup when they were looking for in-house technology to encrypt postage over the Web. But then the IT staffers got others at the Rosemont, Ill.-based company involved to broaden and deepen the deal with Stamps.com, according to James E. Lubinski, executive vice president of operations at Galileo. He says the staff "took that deal much further along than what you would have expected three or five years ago."

Galileo isn't alone. Because of the Web, IT professionals are being called on for a lot more than just technical know-how. They need to be negotiators, deal makers, astute businesspeople and, all too often, counselors to help mitigate disputes among internal and external customers who want the Web to do different things. All these new roles require new kinds of "soft" skills, many IT executives agree.

Some shops teach these skills in off-site training sessions; others do less-formal on-the-job training. Some executives say the Web requires hiring different types of people from the get-go.

Constant Pressure

Fueling the change, in part, is the hastened pace of development that's needed to stay competitive on the Web. "You're under pressure all the time," says Pierre Samec, CIO at Chemdex Corp., a Mountain View, Calif.-based online marketplace for the life sciences industry. "And that takes someone who can deal with ambiguity, who can learn from our customers, [who] assumes we'll never know all of what we need to know. It's all about learning."

That squeezed time-to-market also means that IT staffers need to gather requirements from users much more quickly. "You're talking to people you've never met, at suppliers and at customer shops, and that means you need to communicate more effectively," says Tom Johnson, a partner at KPMG Consulting LLC in Minneapolis. "You need to listen and understand in two hours what used to take several weeks or months." So, he says, speaking, writing and listening skills are more important than ever in today's IT environment.

Also critical are skills that used to be relegated only to top managers — understanding costs, returns and business strategy. As IT professionals are called on to carry out more joint deals with technology suppliers to help expand the Web's presence into new areas, they need to understand what types of deals make sense for the business. They also must understand their roles in seeing these deals through.

Another issue is that the Web is more public than any preceding technology — everyone sees mistakes.

"Everyone and his brother is an Internet developer, and everyone has an opinion," says Marc DeNarie, interim director of energy management systems at Pacific Gas & Electric Co. in San Francisco. "It's a madhouse — and that requires negotiation skills. You need someone who can tell you to take a hike with a smile, and everyone walks away happy."

Setting expectations has always been part of IT culture and practice, but it's different with the Web. "People use the Web all the time for their own use, and they see what's being done," says Galileo's Lubinski. "And sometimes they ask, 'If these other companies can do it, why can't we?' It creates an impression that things can be done, and we have to do a better job of explaining in layman's terms what the issues are. It's heightened."

> **"People use the Web . . . and they see what is being done. And sometimes they ask, 'If these other companies can do it, why can't we?'**
>
> JAMES E. LUBINSKI, EXECUTIVE VICE PRESIDENT OF OPERATIONS, GALILEO INTERNATIONAL INC.

Anyone Need Help?

So, what does all this mean for IT managers? You have to be on your toes to spot who needs help and figure out how best to teach soft skills. At Wells Fargo & Co., it typically comes down to on-the-job training, says George Cheng, senior vice president of online financial services at the San Francisco-based banking company.

Still, as Wells Fargo and others have discovered, the smartest companies hire IT staffers who already have soft skills. "More than half of the people who do our technical interviewing aren't technical people," Cheng says. "It makes sense that if someone is going to need to work with marketing people, a person with [a] marketing background should be involved in the interviewing process."

"Two-thirds of our developers were hired because they've got great people skills," says Sharon Vonk, chief technology officer and vice president of customer care at MetalSite LP, a Pittsburgh-based online marketplace for the metals industry. "We have more [technical] people with MBAs than we have with computer science degrees." MetalSite interviews for leadership, customer relationship skills and adaptability to the corporate culture. The difficulty in hiring for the Web, Vonk adds, "is to find someone with broad business understanding but also with very specialized skills" in technology.

Ambrosio is a freelance writer in Marlboro, Mass. Contact her at johannaambrosio@aol.com.

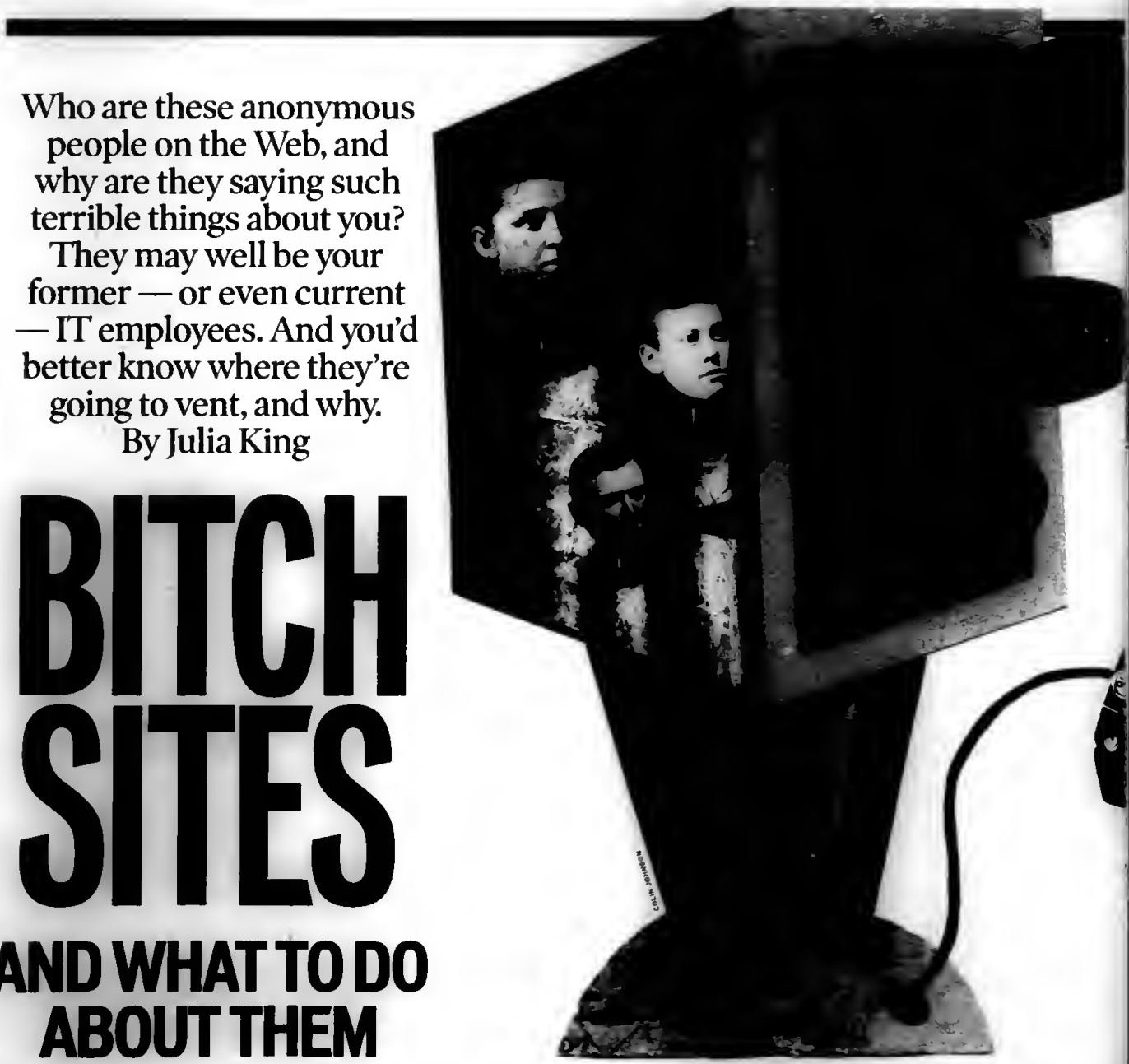
IBM, WebSphere, the e-business logo and Software is the soul of e-business are trademarks of International Business Machines Corporation in the United States and/or other countries. © 2000 IBM Corp. All rights reserved.

Who are these anonymous people on the Web, and why are they saying such terrible things about you? They may well be your former — or even current — IT employees. And you'd better know where they're going to vent, and why.

By Julia King

BITCH SITES

AND WHAT TO DO ABOUT THEM



MORGAN STANLEY DEAN WITTER & CO.'S equity researchers and bond traders make lots of money. But for information technology professionals, the New York-based financial services firm is "a regular sweatshop," according to a posting on the Internet gripe site *www.vault.com*. On tbe upside, though, the company offers all new hires, including IT professionals, excellent training that lasts four months.

Thinking about taking a job at Andersen Consulting? Expect the Chicago firm to "grind you into the dust." Arthur Andersen LLP, its former sister company, isn't mucb better. There, the "pay is horrendous."

And by the way, The Chase Manhattan Corp. in New York has absolutely no concern for its employees. The so-called "Cbase Values" are a joke inside the organization.

These are just a few of tbe cboice tidbits to be found on message boards at *www.vault.com*, whicb bills itself as an "electronic watercooler" for workers seeking the scoop on what goes on inside companies.

But just how useful are sites such as vault.com to IT managers and workers? Do they warrant your attention on any kind of regular basis?

The short answer is yes. Managers can get an unfiltered version of what workers think of them and their companies by periodically tuning in to these sites. And job seekers can gain access to information that could make all the difference in a decision to accept or reject a job offer.

Like other Web sites geared toward employees, New York-based Vault.com Inc.'s company message boards are long on worker whining about low pay,

long hours and miserable managers. That's why they're mainly known as "bitch" or "gripe" sites.

There's also a good deal of sniping among workers with differing views on everything from project management methods to expense accounts. For a sampling, head straight to Vault.com's message board oo Anderseo Consulting, where contributors tend to amplify their views with ample doses of cynicism and four-letter expletives.

Of course, everything you read oo these sites should he takeo with a grain of salt.

"For every one thing that's true and useful [oo the electronic message boards], the offset is a couple [of] hundred things that are just ridiculous," says Vaughan Merlyn, an IT consultant at The Concours Group in Kingwood, Texas.

"If one looked at what the Web sites were saying about [America Online Inc.] two years ago, you'd never go work for them," Merlyn notes. "But today, if you're not a subscriber or investor [in AOL], you probably have missed out."

It's not that these sites doo't have value, Merlyn says. "You just have to he careful because they're unfiltered. Anyone with an ax to grind can put discreditable informatioo op there." And, boy, do they.

Still, Merlyn and other experts say managers should regularly monitor sites to keep their fingers on the pulse of the rumor mill. But they should never rebut anything they read online. Doing so works only to lend credibility to a rumor.

Be Aware of Gripes

Mark Walztoni, vice president of human resources at Mastech Corp., an IT consulting and contracting company in Oakdale, Pa., recommends that IT and hiring managers regularly read what's posted on elected sites. Walztoni, for example, regularly checks Santa Clara, Calif.-based Yahoo Inc.'s message boards for postings about Mastech.

If he comes across what he deems a false rumor that must be set straight, Walztoni sends all employees an e-mail clarifying the company's position. Another option is a statement in the company's newsletter.

"I would not participate [on the message boards], but I do read them, and I temper everything I do read because you never know who's at the other end. It could be a short-seller or a disgruntled employee," he says.

But Walztoni says be still monitors the site regularly because "in the world of IT recruiting and retention, you can't afford to turn a deaf ear to any kind of feedback."

Every once in a while, there's also the possibility of a positive surprise, such as the time Walztoni discovered someone had posted a Mastech press release about the company's $4,500 employee referral bonuses. "It said the company must he pretty good if they were offering thai kind of inceotive," he says.

Keeping Perspective

Like IT managers, IT job-seekers need to view the information from so-called bitch sites with a healthy dose of skepticism. Sometimes the name of the site offers a pretty good indication of what's to he found there.

One example is *www.disgruntled.com*, which invites workers to "tell us something your boss did that was really stupid or mean" or "why the organizatioo you work for is dysfunctional."

Other sites, like *www.walmartsucks.com* and *www.aolsucks.com*, are geared more toward customer complaints, but they have been known to contain employees' complaints as well.

Still, it pays for workers to scan the sites, just as it pays for managers to scan them.

But employment experts say that's just the first step. Job-seekers should take the information they find on the sites and ask about it during the ioterview process, rather than use it to screeo out potential employers.

By and large, that's what most job applicants do at Owens Corning in Toledo, Ohio, according to Bill Hamilton, a company spokesman.

"I have never heard of anyone turning us down for a job offer because they went off and read something oo a gripe site," Hamilton said.

Hamiltoo suggests that IT professionals — perhaps more so than other categories of workers — "recognize gripe sites and chat rooms as forums for individual opinions and not as legitimate publications where people do research and get their facts straight."

Hiring managers at other large companies, incloding Federal Express Corp. in Memphis and Eli Lily and Co. in Indianapolis, also report that the sites have had little, if any, impact on the companies' ability to attract and hire IT workers.

"We've not had a lot of focus on them at all," said Sandy Sifferlen, a recruiting manager for IT and engineering at Eli Lily. ▮

BITCH SITES TUTORIAL

WHAT ARE THEY?
Web sites or message boards where workers post so-called real-life stories – usually complaints – about their companies, managers, career choices, working conditions and more.

WHO STARTS AND MAINTAINS THEM?
Anyone, including competitors, activists, disgruntled employees, whistle-blowers or self-appointed watchdogs. Their motives also run the gamut, from venting frustration and anger to getting revenge by spreading misinformation.

WHO POSTS TO THEM?
Employees or ex-employees, usually. College seniors and other potential employees also frequently post questions soliciting specific information from current employees. They usually want to know what it's like to work at a particular company.

WHO VISITS THEM?
Everyone from IT managers, public relations agents, human resources managers, recruiters, potential employees, current workers, consumers, the curious and those that stumble in when a site pops up on a search engine query.

WHAT IF YOU OR YOUR COMPANY IS MENTIONED AT ONE?
Choose your battles carefully, says Renu Aldrich, a spokeswoman at eWatch Inc., a Minneapolis-based company that scours sites for all references – good and bad – to its clients. Respond calmly and appropriately, perhaps by requesting proof of wrongdoing. Off-line, managers can point out errors on the sites plus admit when they're wrong, perhaps in an e-mail or company newsletter, to ensure credibility, says Aldrich.

WHAT SHOULD YOU DO IF A POTENTIAL EMPLOYER IS MENTIONED ON ONE?
Take the information with a grain of salt. Ask about it during the interview process.

WHAT ARE SOME POPULAR BITCH SITES?
- *www.vault.com*
- *www.disgruntled.com*
- *www.[companyname]sucks.com* (Wal-Mart Stores Inc., America Online Inc., GTE Corp., Toys R Us Inc. and others)

There are so many consumer-oriented gripe sites (that may also contain worker information) that Yahoo Inc.'s Web portal has a special section for these sites at *http://dir.yahoo.com/Business_and_Economy/Consumer_Advocacy_and_Information/Consumer_Opinion*.

– *Julia King*

Advice for the Promotionally Challenged

When it comes to being in line for promotion proposals, do you find yourself always a bridesmaid but never a bride? Consider the following wisdom on how to finally make it to the advancement altar. By Jeffery D. Zbar

JACKIE HUGHES knows what she likes in fast-track staffers hoping to climb through the ranks. The problem is, they're very hard to find.

In her 15 years in information technology management, Hughes says less than 20% of her staffers have been of the caliber that she would like to see in management positions.

Too many IT professionals don't empathize with others or communicate progress or problems to managers or users on specific projects — in other words, they lack the people skills needed to make them reliable leaders, says Hughes, vice president and CIO at Specialty Laboratories Inc., an international medical reference lab in Santa Monica, Calif.

Many IT workers simply haven't learned the art of "spin doctoring," or sending the messages that others want or need to hear, Hughes says. Some are even guilty of being prima donnas or elitists, unconcerned with how or why their work fits into the bigger picture.

They remain perennial bridesmaids as their peers become brides and grooms of promotion within the organization.

"The type of person I want to promote is someone who can instill confidence that they are in control," says Hughes. "That holds a lot of technical people back. They're so absorbed with what they're doing, they can't connect with what the company or key organizations are trying to do."

In today's tight labor market, growth opportunities abound — for the right candidates. Executives say the problem is that many staffers lack the qualities needed to rise through the ranks or be singled out for plum jobs or leadership assignments. It's not that there's a single attribute that becomes an Achilles' heel; rather, many workers lack a package of skills that many executives are looking for in promotable candidates, says Helen MacKinnon, a former IT manager who is currently president of Technical Connections Inc., a Los Angeles-based IT recruitment firm.

Risk, Recognition and Reward

The worst habits a passed-over worker demonstrates include blowing commitments or deadlines, not advancing his own education or knowledge, and not taking risks, MacKinnon says.

Hughes says she looks for staffers who are willing to take risks, who are self-motivated and who are willing to learn. She also looks for people who are willing to work hard and who are willing to take on responsibility.

MacKinnon says she looks for people who are willing to take on responsibility and who are willing to learn. She also looks for people who are willing to work hard and who are willing to take on responsibility.

Hughes says she looks for staffers who are willing to take risks, who are self-motivated and who are willing to learn. She also looks for people who are willing to work hard and who are willing to take on responsibility.

MacKinnon says she looks for people who are willing to take on responsibility and who are willing to learn. She also looks for people who are willing to work hard and who are willing to take on responsibility.

Taking Off the Blinders

Managers say the ideal would-be brides or bridegrooms in corporate IT attempt to broaden their skills, remove the visors that blind them to other corporate concerns and work longer hours than is expected.

This is especially true for supervisors who want to advance, says M. Victor Janulaitis, CEO of Positive Support Review Inc., a Santa Monica, Calif.-based IT consultancy. He warns that although good IT staffers are at a premium, workers shouldn't become cursed with self-importance. "Even in an employees' market, they can't have unrealistic expectations," he says.

Tomorrow's managers will become more entrepreneurial as companies place more responsibilities on internal IT, Janulaitis says.

Managers will find themselves interacting directly with larger and more diverse groups within the company, adds Jackie Hughes, vice president and CIO at Specialty Laboratories.

Managers will be expected to lead with less guidance, says Hughes, who often cites informative anecdotes, managerial gaffes and other insights she has gleaned from management books. From those books, she's able to present scenarios where managers have learned from their mistakes.

Hughes says she believes it's her role to ensure that Specialty Laboratories has a succession plan that leaves as few workers as possible stranded at the altar. She says if she helps people with their careers, they are happier and the organization is more stable – and there are fewer bridesmaids. "It is critical to my success to have the right people on staff," Hughes says. – *Jeffery D. Zbar*

edge of IT through conferences or classroom study and staying focused on a single technology without concern for branching out, MacKinnon says. These workers don't ask for risky assignments because of a fear of failure. They don't realize that success could bring heightened recognition and improved career possibilities, she says.

Even if all those attributes are in place, the workers who get left behind often don't speak up to managers or the company's senior management, MacKinnon says. They don't request leadership or presentation roles on projects, and that lack of self-promotion can often leave even a ripe managerial candidate hovering in the shadows. When e-mailing project news or updates to their managers, these workers won't send copies to more senior management — even with their supervisor's approval, she notes.

"You want to get that kind of exposure. It doesn't have to be obnoxious, but it has to be done," MacKinnon says. "If you're in a large organization, you have to let the right people know who you are."

Being Part of Tomorrow's Team

Bob Rose says fewer than a dozen of his 37 staffers will rise through the ranks at Miami-based Carnival Cruise Lines. As manager of end-user support, Rose follows the philosophy of company President Bob Dickinson: "If we had to start Carnival over again tomorrow, who would the manager use?"

The people who don't get the promotions or plum assignments are poor partners to the company and its end users, Rose says. They just don't see the big picture, be says, and they don't realize or acknowledge that the department's ultimate goal is to facilitate or boost sales of cruise vacations.

Rose also warns that "information hoarders" who deliberately identify themselves with their skill sets and expertise and believe that their technical prowess will make them indispensable could be left behind.

Companywide, Carnival managers rank employees on a scale of one to four. Rose says half his staffers are ones or twos — people who could be replaced "in no time" with a simple want ad. "If it's a guy who believes be's irreplaceable, I look to replace him," Rose says.

Lynn Johnson, supervisor of logistics at Carnival, says she's never considered herself irreplaceable during her 11 years at the company. But sbe still hasn't climbed Carnival's corporate ladder.

In the past, it was rare when Johnson was noticed by her superiors. Sbe admits she played the role of perennial bridesmaid, with co-workers rising through the ranks and getting noticed while she toiled in the shadows. When she was noticed, ber demeanor was considered "very direct" — a tone she acknowledges likely beld her back.

"It was how I talked to and handled people," Johnson says. Then Rose, her boss, sat with her, acting as a mentor and offering her advice about how to carry herself with peers and managers and in meetings and presentations. Today, Johnson's a team player.

What changed? She received guidance from ber manager and gained the wisdom to take cues, Johnson says. Higher management now has more confidence in and awareness of her, she says. Her job title has remained the same, but her pay has increased.

"I was somebody else's bridesmaid," Johnson claims, three years after Rose began belping her find her way to the advancement altar at Carnival. "Now my satisfaction is up 200% from where it was. There's no comparison."

Zbar is a freelance writer in Coral Springs, Fla.

Catching the Garter Of Promotion

Want to catch the garter or bouquet of management opportunity? Use the following tips to make yourself the most eligible person in your organization:

- **Feel for your "mate."** People are relying on your efforts. Let them know that you care about their problems and you are working to resolve them.
- **Talk with your mate.** Some workers fail to report progress or problems with projects to managers or users. Inform people earlier about possible problems, and they'll appreciate the warning – and be able to prepare for the outcome.
- **Spin it right.** Don't just report any bad news you may have. Spin it with alternatives or options.
- **Meet your vows.** Keep your word on promised deadlines and commitments – especially if others are depending on the timely delivery of your work.
- **Learn.** Make yourself a desirable employee by staying skilled and certified in the latest technologies.
- **Serve the company and its family.** Realize what's expected of you in your current post and don't dodge responsibilities – no matter how burdensome.
- **Don't hoard information.** If you believe your expertise with a particular application makes you indispensable to the company, your managers may become suspicious of your intentions.
- **Speak up.** Even if you do it all professionally, if you don't let others – especially your managers and their managers – know about your successes or desire to take on more challenges, you could remain the eternal bridesmaid, getting passed over for choice assignments or promotions.

– Jeffery D. Zbar

ILLUSTRATION BY POLLY BECKER

Intangible Assets

BY MATHEW SCHWARTZ

DEFINITION

Intangible assets represent an attempt to reconcile the difference between the value of the assets a company counts on its books and the value the stock market assigns it. Examples of intangible assets include knowledge inside a company and good hiring practices, which contribute to making the company successful.

THEORETICALLY, the value of a company is the sum total of all the assets it carries on its books. So why is the total stock value of some companies — especially technology firms — as much as 50 or 100 times greater?

"That difference must be related to intangible assets," says David Larcker, professor of accounting at The Wharton School, the University of Pennsylvania's business school.

Assuming, as Larcker does, that the market is rational — rather than being in the midst of a speculative bubble right now — the stock market should value a company according to its current worth, plus the factors that could contribute to its success.

Value that's intangible, however, is also subjective. And subjective perceptions can stretch the value of a stock much higher — or much lower — than the fundamental financial picture of a company would indicate, say analysts.

Knowing True Value

Those fluctuations and the use of general accounting practices make it very difficult to calculate a company's true value. "People are starting to wonder if this accounting system that has served us well for 500 years has become obsolete," says Larcker. That's because traditional accounting is tied to bricks-and-mortar assets, to a "what happened?" mentality, he says. But in many newer companies, investors are interested more in people or ideas than previous performance.

It may be true that accounting "eventually accounts for everything," but Larcker says that notion applies more to long-term stewardship of a company's assets than to its current market value.

Financial analysts, the U.S. Securities and Exchange Commission, investors and many others, of course, would like to be able to better predict and measure a company's current worth. So they're studying a broad range of factors that could influence intangible assets, from business metrics such as customer loyalty to more New Age metrics like employee happiness.

Areas of Excellence

Two examples illustrate intangible value. The first is Dell Computer Corp., which has "a superior logistical supply chain" and "a superior ability to get people to the Web site to order," says Larcker. Contrast Dell with Compaq Computer Corp. Compaq has much higher revenue than Dell, but it isn't as highly valued in the market, partly because it's still revamping its supply chain and Web-based ordering system. Clearly the innovation or intelligence — or however you characterize Dell's aforementioned aptitudes — would be an intangible asset, Larcker says.

Another example is Microsoft Corp. "The amount of knowledge they have generated has got to be a primary asset — it's in people's heads there," says Larcker. But Microsoft corporate culture is also valuable. "They have figured out what kinds of people fit into that culture, and they have superior hiring practices," he says. That shows how aspects of a company that are often considered mundane, such as hiring practices, can impact a company's bottom line.

As Microsoft and Dell illustrate, even if leading companies don't use the terms "intangible assets" or "knowledge management," they manage those assets.

Besides striving to adopt hiring practices designed to boost the corporate culture or implement excellent supply chain logistics or customer-friendly Web order entry systems, many companies can begin managing intangible assets by documenting their processes. "It's not just a question of writing down what you know, but getting it built into the business processes," says Henry Morris, an analyst at International Data Corp. in Framingham, Mass.

Just studying — and of course, retaining — key employees is a start, says Morris.

For example, he says, ask yourself, "What does the top sales representative do after he lands a new account?" Gaining that knowledge and applying it to sales representatives who don't perform as well can help those salespeople discover previously unknown ways to boost their productivity — and perhaps their motivation and happiness levels.

Using IT to Boost Assets

Knowledge management software can help sustain a company's excellence. The term *knowledge management* can be applied to a range of systems. For example, it can be a system used to document employee best practices; it can be an online forum in which employees share tips and tricks and a system for subsequently indexing that forum and enabling other employees to search it; or it can be a database that lets researchers track discoveries their company has made so they can try to find new applications for those discoveries.

The knowledge and experience of an information technology department is an intangible asset in and of itself, but so is the way IT applies that knowledge to make other departments function more smoothly.

In situations where departments don't work well together, an IT department could press for standardization on fewer technologies, rather than waiting for businesspeople to come up with "airline magazine syndrome" projects that don't contribute to productivity. That approach likely would give the company a more stable technology infrastructure, says Ashim Pal, an analyst at Meta Group Inc. in Stamford, Conn. Even stability has an intangible value.

Yet the IT staffs at many companies would rather boost their skills on new products than stick to established ones, Pal says. "They want to do a Java project because it adds $30,000 to their [résumés] the next time around."

Intangibles

Brand
Consumers often have an affinity for a brand irrespective of a company's performance. Take Apple Computer Inc., General Motors Corp.'s Saturn unit or The Coca-Cola Co., for example. The level of recognition those brands enjoy helps make sales *and* has value on Wall Street.

Corporate culture
Microsoft has established a corporate culture that produces the results it's looking for, and it goes out of its way to hire people who will fit into that culture, not necessarily revolutionize it. Corporate culture also reflects knowledge gathered within a company.

Customer loyalty
Simply put, if a company's customers return often and spend a lot, then the company is doing something right. America Online Inc. doesn't typically give its customers cutting-edge software, back-office architecture or points of presence, but those customers are loyal. Accordingly, AOL does very well in the marketplace.

Environmental sustainability
An example of poor environmental sustainability is Hooker Chemical & Plastics Corp., which dumped toxic chemical waste near the Niagara River from 1942 to 1953 with little knowledge of the long-term hazards such dumping posed to the environment or to human beings. The company's value obviously suffered from the resulting public wrath and various lawsuits. This bad public image is a negative intangible asset.

Innovation
Pharmaceutical companies often derive enormous revenue from already-discovered materials given new application. Examples: Post-it notes and superglue.

Knowledge management systems
Systems or processes a company installs that help unearth best practices, promote knowledge sharing or provide a repository for such knowledge and make it useful to the rest of the workforce.

Product management aptitude
Systems inside a company that help deliver products more quickly, such as excellent supply-chain logistics, order-entry systems, fulfillment systems and customer service.

Technological sustainability
Patent on a new widget with myriad as-yet-unrealized uses.

– *Mathew Schwartz*

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Every day, technology is making life better and career skills obsolete.

Keeping up with technology is a competitive necessity. Whether you're building a company, a team, or your own career, TrainingNet is your one-stop resource for staying on top.

In today's knowledge-based economy, skills are the most critical asset. If skills grow stale, so do companies. That's why professionals go to TrainingNet and smart companies plug the TrainingNet solution into their company intranet.

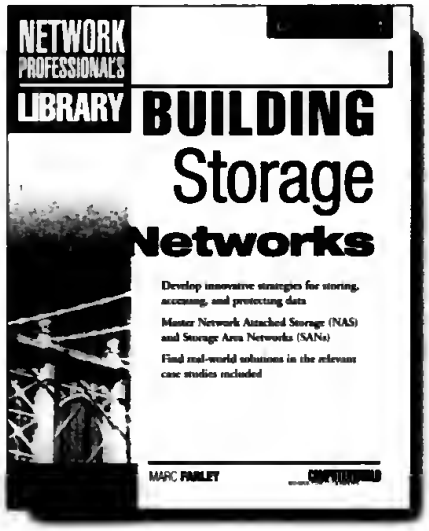
With literally hundreds of thousands of courses in everything from IT certification and desktop applications to management and finance, TrainingNet is the largest and smartest training marketplace. Search, evaluate, and buy instructor-led and online courses, CDs, videos, books, and audiotapes from 1,000+ leading providers.

So whether you need training for your entire team, or yourself, TrainingNet

TrainingNet.com

Practical Tools for Building Storage Networks

Compaq StorageWorks



Building Storage Networks Sponsored by Compaq

The latest addition to Computerworld Books for IT Leaders, Building Storage Networks gives readers everything they need to plan and design storage networks from the ground up — or from their existing infrastructure. You will understand the differences between the major storage technologies and become fluent in storage network topics such as network I/O, tracing data paths from application to storage and Internet based storage.

Compaq's Storage Commitment

Compaq's sponsorship of Building Storage Networks, just like their sponsorship of Storage Networking World, demonstrates their commitment to open, standards-based storage solutions. To get your copy, go to http://www.compaq.com/products/sanworks/sanbook.html

SPECIAL OFFER

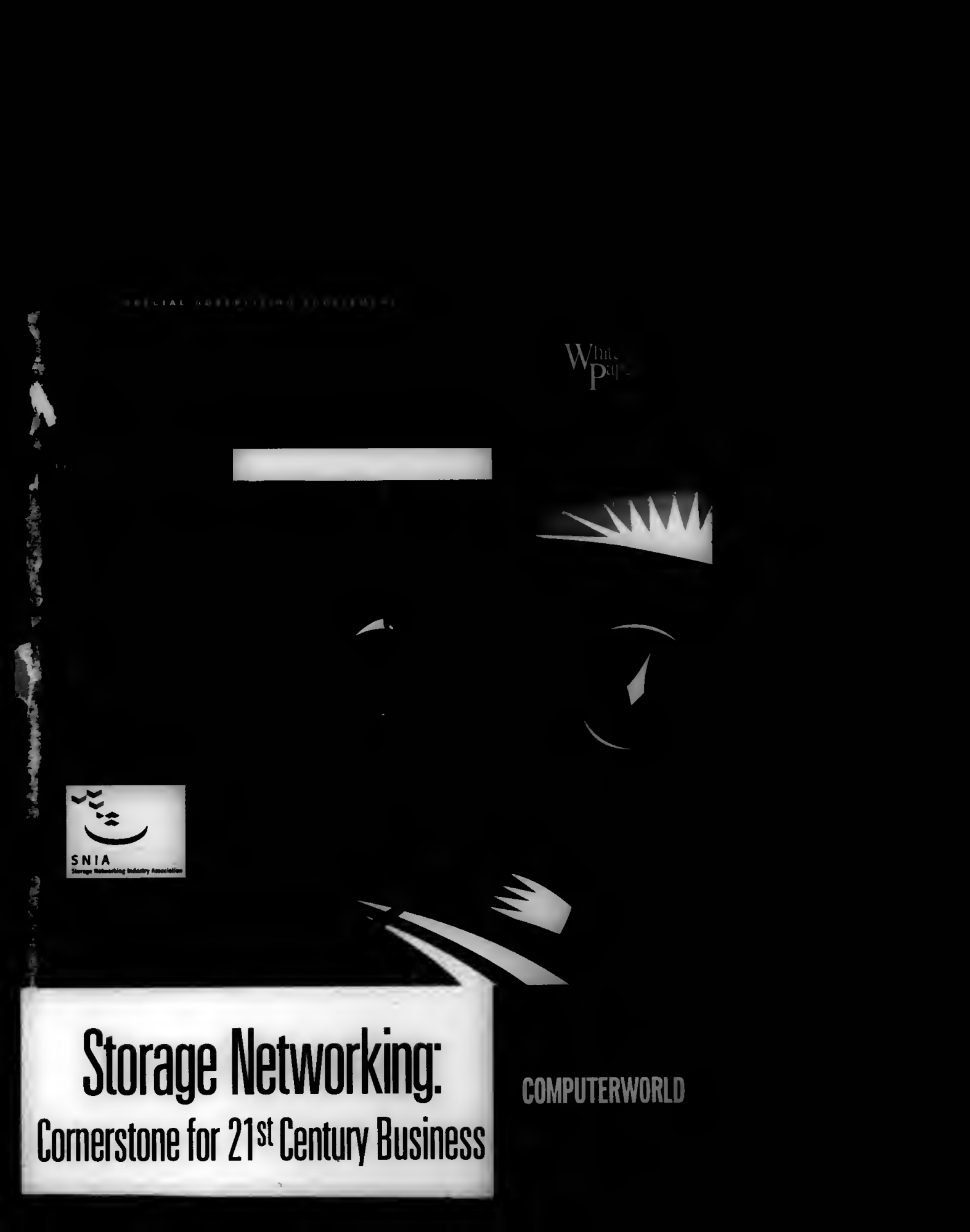
Only $35.99 per copy

That's 20% off the regular cover price

But hurry. This special discount offer ends soon.

COMPAQ NonStop™

COMPUTERWORLD BOOKS FOR IT LEADERS



Storage Networking:
Cornerstone for 21st Century Business

COMPUTERWORLD

For Superior SAN Solutions, Just ARCserve*IT*.

When you ARCserve®*IT*,™ you get the first storage management solution that leverages multi-vendor Fibre Channel Storage Area Networks (SAN), enabling you to make the most of your IT resources by off-loading data from your business network to its own dedicated storage network, freeing up bandwidth for other business-critical operations. When you ARCserve*IT*, you'll be able to share storage devices while reaping the benefits of high-speed backup and restore over a fast fiber-optic storage backbone.

ARCserve*IT*, Complete Storage Management,™ delivers advanced functionality, easy administration, and unsurpassed reliability to any environment — from a single server to a global enterprise. ARCserve*IT*'s extensive suite of solutions offer extensive client/server support, automated disaster recovery, "hot" application protection, enhanced performance, policy-based data management, non-stop availability, and support for the latest IT technologies.

For more information on SAN initiatives, call **1-877-2 GO FOR IT** or visit our website at **www.cai.com/justarcserveit**. Do it today— because when it comes to improving storage performance and efficiency, you have only two choices: you can live with it—or you can ARCserve*IT*.

Call for training on ARCserve*IT*
1-800-237-9273

COMPUTER® ASSOCIATES
Software superior by design.

© 1999 Computer Associates International, Inc., One Computer Associates Plaza, Islandia, NY 11749. All product names referenced herein are trademarks of their respective companies.

NETWORKING:

Cornerstone *for* 21st CENTURY *Business*

David Hill,
Aberdeen Group

Why does storage matter? Why do enterprises care beyond opening up their checkbooks to buy more and more *tons* of gigabytes and terabytes each year? The answer is simple: The way companies will use the *content* in those acres of storage to separate themselves from their competitors — while managing storage to enable the effective use of that content — will become more and more critical to company success.

Neither bandwidth nor application code is likely to confer lasting competitive advantage for a company. Often forgotten in the current gold rush to achieve faster bandwidth (networks) and more effective processes (applications) to differentiate oneself from competitors is the fact that the advantages conferred by bandwidth and processes will erode over time. Increased bandwidth follows primarily a time and money curve. Many enterprises long ago determined that third-party software vendors could more effectively provide application code. The fine-tuning that each business makes to an application can be copied by a competitor, if necessary. In contrast, the data that makes up the content that fills up the storage is unique to each enterprise (whether it is customer relationship history, product design or just e-mail). Content will remain the last proprietary source of competitive advantage.

Storage isn't a static resource, as the word *storage* implies. Content must be protected, moved hither and yon, and be accessible on demand. Yet, as storage grows exponentially, information technology budgets and headcount remain roughly constant, so the need to manage storage efficiently and effectively increases. IT must make decisions to acquire storage hardware and storage management software that will reduce this need. Failure to do so puts at risk the ability to use the key business differentiator — content — effectively.

Network Storage and Storage Networking

Storage is not only a dynamic resource, but it is also a networked resource. Almost all storage can be reached over a network. That applies equally to a Microsoft PowerPoint presentation downloaded via an e-mail attachment to a laptop and to a multiterabyte Oracle data warehouse. Managing network storage is the role of storage networking.

Seen from the perspective of an individual (for example, a mobile worker accessing the Internet), business files (word processing), data (spreadsheet) and general content (video files) can be uploaded to, downloaded from or e-mailed between a business department, a corporate data center via an Intranet, a Web-outsourced storage facility (such as an

support [illegible] management. Hill is currently advising leading storage and storage management suppliers on what they will need to do to address enterprise needs for storage networking. He can be reached via e-mail at hill@aberdeen.com.

application systems provider) or the open-to-the-public Internet. From an IT perspective, mission-critical data for which it has custodial management responsibility may be anything from removable media on a laptop to internal or outsourced storage systems located worldwide. It is essential for IT to have a storage networking strategy in place so users can access content when and where they want.

Storage networking as a broad term encompasses not only the often-discussed storage-area networks (SAN) and network-attached storage (NAS), but also even direct-attached storage. Moreover, distance limitations don't apply (albeit LANs or WANs can both use storage networking). That doesn't mean the same type of storage networking can be used in all situations. For example, typically, a SAN is considered a campus solution measured in the tens of kilometers. Yet, even here, WAN SAN solutions are becoming available in certain situations.

Storage Gains Its Independence

The fact that all storage is network storage leads to another conclusion: Storage has become not just a key differentiator, but also a separate and distinct component of the IT infrastructure in its own right. It is easy to find server-independent storage for a SAN and a NAS that owes no allegiance to any particular server. Even external storage attached with the umbilical cord of a bus to a single server can be seen as independent if the server is viewed simply as the conduit to access data for the actual user. In fact, the server could be replaced with a more powerful one and, except for the downtime to switch over the end user, the only perceived difference might be faster performance. If, however, the storage system were swapped out without time-consuming data migration, the end user would notice even if greater capacity and faster storage were made available.

Viewing storage as independent is key to understanding why it needs to be managed as an IT infrastructure component in its own right. Some would have an enterprise believe that building a storage infrastructure is a simple process. It isn't. Storage is as complex as the more well-recognized components of the IT infrastructure, such as server and network hardware, as well as application, database and operating system software.

Storage management is the glue that makes storage work. And it is much more than backup and recovery software. Storage management also includes storage system health diagnostics and repair software, storage resource management software to improve storage planning (to avoid running out of space) and specialized functions, such as point-in-time copying that allows backup to take place without having to take a revenue-producing transaction processing system off-line.

Storage purchases aren't just about how and when to acquire extra gigabytes of capacity. Of course, large disk arrays for high-end enterprise or midrange requirements are the most familiar buys, but tape storage systems are also a key purchase.

Storage decisions aren't just about how to acquire hardware and software; they can also be policy decisions, such as how to back up distributed, mission-critical data. These policy decisions can also include when to opt for storage outsourcing.

The Storage Utility Framework

Among the many decisions that IT has to make about storage in 2000 are SAN, NAS, various flavors of storage management software and storage outsourcing. To understand all these choices, an enterprise needs to put them in the context of a storage utility.

A storage utility is analogous to other utilities — telephone, electricity and water — in terms of always being available and relatively inexpensive. Today, a storage utility is a conceptual framework rather than a reality. Only in very controlled, single-vendor storage environments does a storage utility come close to being true today. But the vision of a storage utility *can* be realized today; enterprises can look at what is available now and determine how their choices will fit within the storage utility. In addition to a standard service-level agreement for performance and availability, IT should look for other benefits that the storage utility will have. These include the following:

- Manageability: Easing the process of planning, configuring, monitoring and controlling storage.
- Flexibility: The ability to make changes with minimal disruptions, such as hot-swapping disk drives without bringing the storage system down.
- Integration: Working in close harmony with applications, servers and networks.
- Scalability: Meeting significant growth requirements without major disruptions or loss of storage investment.
- Robustness: Availability plus resilience to shocks and stresses on the overall IT environment without severe interruptions to service.
- Breadth: Extra features, functions and facilities, such as remote mirroring and point-in-time copy, that create additional value for the overall storage solution.

Using storage networking to create the storage utility is an ongoing challenge for IT departments. Think of storage networking as IT's next course of action.

SANs: A Building Block for the Storage Utility

Storage is still the Rodney Dangerfield of the IT infrastructure — it doesn't get the respect it deserves. Even though storage requires the same high degree of skill, knowledge and experience as other parts of IT, few — if any — in a typical IT organization are experts in storage networking. That means opportunities for career growth within IT organizations await those who can master the art of storage networking.

And there is no better way to start that mastery than by learning how to plan, deploy and operate a SAN. For all the hype and interest in SANs, relatively few enterprises will own up to having one. Of course, that may be because there are many definitions of a SAN. A simple way to describe a SAN is as a centralized pool of storage shared by two or more servers over communications links, for example, buses, dedicated to I/O-related traffic. That would greatly increase the number of SANs in the world, since ESCON, or even SCSI connections between two or more servers and a disk storage array, such as an EMC Symmetrix, would qualify as a SAN. Typically, the communications channels are Fibre Channel — either Fibre Channel Arbitrated Loop (FC-AL) using hubs or Fibre Channel fabric using switches.

A SAN does have advantages. The ability to separate

storage from servers by kilometers instead of meters is useful for some enterprises but not a main driver for many others. The ability to put a tape library shared among many servers on a SAN instead of having individual tape drives on each server improves the manageability of backup and reduces burden on LANs and servers. That's valuable for some firms but isn't a driving force for many others.

Although more organizations are looking at SANs, a lack of a compelling reason to move to SANs, as well as uncertainties surrounding the ability to deploy a SAN, are inhibiting the broader adoption of the technology. Thus, the "killer application" for the SAN has to be the storage utility. Storage consolidation is one way of moving toward a storage utility, as it improves the manageability of storage and leverages specialized storage management functionality, such as point-in-time copy and remote mirroring. Although Fibre Channel isn't necessary for this process, a Fibre Channel SAN can help when there are multiple disk arrays and one or more tape libraries in the SAN.

The storage pools that make up the SAN should be more scalable, robust and flexible than isolated islands of storage so they move the enterprise in the direction of the storage utility. But storage pools may lead to a possible conflict between business unit management and IT management that the enterprise needs to resolve. Business unit management focuses only on applications and storage for which they have responsibility. They may not want their information commingled with that of other business units in pools of storage for fear of loss of availability or responsiveness of data access. Confidentiality of the data may also be an issue. Meanwhile, IT management wants the efficiency and effectiveness of managing storage comprehensively rather than as splinters of storage scattered randomly throughout the company.

The answer is the use of service-level agreements (SLA). Even an informal SLA without the contract-like rigidity of a formal SLA may be sufficient. Both parties get what they need, business unit management gets the assurance of good service, and IT, as well as the business as a whole, gains the ability to do a better job at lower cost.

After articulating a clear-cut value proposition for the SAN and making sure that business and IT management are in agreement on the direction for a SAN, a major remaining roadblock is concern over interoperability. Can heterogeneous servers, storage and SAN-specific equipment, such as switches, all play together? If every possible combination is included, the answer is no, never. If a simple set of mostly heterogeneous hardware is used, the answer is yes, and probably now. If a heterogeneous mix that matches 80% of a company's requirements is the target set, the answer is — it all depends.

Much work is being done on interoperability. The Fibre Channel Industry Association (FCIA) and the Storage Networking Industry Association (SNIA) have a SanMark program to verify interoperability among products. The FibreAlliance, an open industry consortium initiated by EMC Corp., has submitted to the Internet Engineering Task Force (IETF) a draft of a Management Information Base (MIB) to ensure the interoperability of SAN management software tools. The five leading SAN switch vendors have created the Open Standards Fabric Initiative (OSFI) to work on SAN-switch interoperability issues. Perhaps of more

immediate impact to those considering deploying a SAN are the interoperability labs that many of the leading vendors have established. These vendors can help IT navigate the interoperability rapids — what is known to work today, what is known not to work today and what needs to be tested to show whether or not it works. No, all interoperability issues haven't been resolved, but that's no excuse for not looking at a SAN.

NAS: A Second Building Block for the Storage Utility

With the advent of the SAN, network-attached storage (NAS) — available for a number of years — is now receiving renewed interest. A NAS is a disk array that is directly attached to a network, such as a LAN. Users who have access to the network can share the information available on the NAS. The NAS front-ends the disk array with a thin server-embedded operating system that is dedicated to managing the I/O requests directed to the NAS system. In essence, a NAS was an information appliance before there were information appliances.

The file-system orientation of a NAS means it has to work with the Network File System (NFS) created by Sun Microsystems Inc. for Unix environments and with the Common Internet File System (CIFS) used in Windows NT environments. In some NAS implementations, users on both Unix and Windows platforms can share (read and write access to) the same file. For example, in a computer-aided design/computer-aided manufacturing (CAD/CAM) system, either a Unix- or a Windows-based user could update documents. In contrast, "sharing" a disk storage array today is typically a process of partitioning the array into fixed pieces, where each piece of the array is assigned to the exclusive use of a particular server.

On the surface, the difference between a NAS and a SAN is that a NAS sits directly on a common network, whereas the storage in a SAN can be reached only by going through servers that connect to the storage through a dedicated "network," for example, Fibre Channel. In a common network, heavy I/O traffic could disrupt acceptable response times for non-NAS applications. However, the bandwidth of the common network may be upgraded, such as when the user moves from Ethernet to Gigabit Ethernet.

To an enterprise, the arguments about whether a SAN or NAS is best shouldn't matter. A NAS could front-end a dedicated storage network, for example, a SAN, or serve files at the back end of a SAN; or the two could be kept separate. A heavy-duty transaction processing system could access storage over a SAN, whereas a NAS would be preferable when text-based files are shared by many users. The question isn't which is better, but where each can best be used.

Storage Management Software: The Storage Utility Glue

Cost estimates for managing storage are some multiple of the cost of purchasing storage, and the cost of purchasing storage exceeds the other IT hardware costs in an IT budget. Reducing the cost of managing storage and leveraging the storage investment are, therefore, two goals that many IT organizations might pursue; especially when the alternative could be unmanageability. Storage management software is the key to achieving these goals — and moving to the storage utility.

Many enterprises still have a limited idea of what stor-

age management software is. Too often, businesses only equate storage management software with backup and recovery software. Although backup and recovery are important types of storage management software, "storage management software" is an umbrella term that covers a set of disparate topics, including the following:

- Data protection, such as backup/restore software and RAID
- Storage health management to monitor, diagnose and repair (where possible) storage system components
- Storage resource management to configure, manage the performance of, plan for and space manage storage
- Replication and virtualization software to copy or logically group storage

All of these pieces have to play together in the continuous storage management process of planning, deploying and operating storage facilities. As much as possible, access to each piece of software should be through a common management interface. A common interface facilitates obtaining action-required information on a timely basis, regardless of what tool it is that provides the information.

Storage management software will need to apply three principles on the way to the storage utility:

- **Automation:** Policy-driven, autonomous software agents can be used to free up IT administrators for nondelegable, higher judgment tasks. IT administrators can set policies. Autonomous agents carry the policies out.
- **Centralization:** A control point enables IT administration to get its arms around storage as a whole instead of trying to piece together isolated storage island fragments.
- **Managing storage logically, not physically:** Obviously, physical limitations still apply, but managing storage logically better conforms storage to business requirements. Moreover, an IT administrator doesn't have to become burdened with physical details that aren't essential for storage management.

All types of storage management software play a role in achieving SLA metrics. For example, without RAID protection, monitoring storage health is unnecessary as a disk failure would have an obvious impact. RAID protection without storage health monitoring would mean that IT wouldn't know when a disk failure had occurred. IT wouldn't be able to take corrective action.

At the same time, neither RAID nor health monitoring addresses out-of-space conditions. Running out of disk space due to poor planning isn't a physical device failure, but out-of-space conditions are no fun.

When a disaster makes a site unavailable, an alternative availability-enhancing technique is necessary. Replication, in the form of remote mirroring, creates a second copy of data at a remote site that is much faster to restore from than tape. But remote mirroring accounts only for physical failure — not data corruption — so fast tape restoration remains a priority.

Replication and virtualization are two approaches that can yield positive surprises as to what storage management can do for a company. Replication has many forms. In its point-in-time copy incarnation, a company may make a copy that can be used to back up an online production database without having to take the production system offline. The time saved may translate into bottom-line dollars.

One form of virtualization enables creation of a single

Do you have copyrighted MP3 files on your servers?

MP3 files take up tons of disk space on your servers. And your servers are crashing costing you a fortune in IT time of staff and lost office productivity. Worse yet, they make your company liable for copyright infringement lawsuits. It's time to put yourself back in control.

www.getagriponit.com

© 2000 W Quinn Associates

COMPUTERWORLD

This White Paper was created by Computerworld Custom Publishing. Comments can be sent to editorial director Ellen Fanning at 508 820 8289 or ellen_fanning@cw.com. This White Paper, as well as other custom supplements, can be viewed online at www.computerworld.com.

disk storage pool across physically distributed disk arrays. That's possible even if each array is directly attached to a single server. To a user application, a database would logically appear to be on one array, thus avoiding the bother of buying more storage. And no SAN or NAS is necessary.

Outsourcing: Someone Else Provides the Storage Utility

Enterprises can let a firm that specializes in storage outsourcing manage all or part of their storage requirements. From the enterprise's perspective, outsourcing appears to be a "storage utility," because the storage is on tap. The storage can continue to reside on site under a facilities management agreement. Alternatively, the storage can be made available over a private network or the Web.

There are many situations in which an enterprise might consider storage outsourcing. An e-business faced with explosive storage growth that creates availability and scalability issues might want to devote its scarce time resources to its core competency tasks and let a professional outsourcing firm manage its storage. A company that needs a second copy of data at a remote site to ensure uptime may not want to invest in another data center. A business that has large temporary spikes in storage demand, such as seasonal upticks or business intelligence analyses, may want to outsource its peak loading requirements.

The barriers that an enterprise has to overcome before choosing storage outsourcing are psychological and economic. The psychological barrier is trust. An enterprise has to be comfortable that an outsourcer can provide service at least as well as the current in-house service. The economic barrier is measuring the cost/benefits tradeoffs. Outsourcing isn't necessarily a less expensive alternative (because the outsourcer has to build in sales and administrative costs, as well as a profit margin). However, the outsourcer may have economies of scale and standardization cost advantages to offset these extra costs. An enterprise should clearly define additional benefits from outsourcing, such as shortened time-to-market or more effective deployment of human resources, to offset cost issues.

As the role of content gains increased prominence, the storage networking engine that drives the network storage content train will also play a bigger role. Storage decisions can be made independently of server decisions. Storage networking is the underpinning for the storage utility that leverages the availability and performance of storage, reduces the administrative burden and gets more out of the storage investment.

Two of the key building blocks for the storage utility are the SAN and the NAS. The NAS takes advantage of the existing network infrastructure, while the SAN inserts a dedicated I/O network. Both create independent storage. On top of NAS and SAN, storage management software will play a vital role in the storage utility. And, if an enterprise doesn't want to build a storage utility itself, storage outsourcing beckons as an alternative.

Enterprises should use the framework of the storage utility to think about their storage networking decisions. Failure to build a storage utility would lead to the inability to achieve storage networking's full potential. Failure to achieve that potential could put at risk the ongoing competitive advantage of the enterprise — content. And that's a risk no enterprise wants to take.

Need to Back Up UNIX and Windows NT?

Backup Express: One Solution Across Platforms

Flexible, Distributed Backup/Restore with Intuitive, Easy-to-Use Graphical Interface

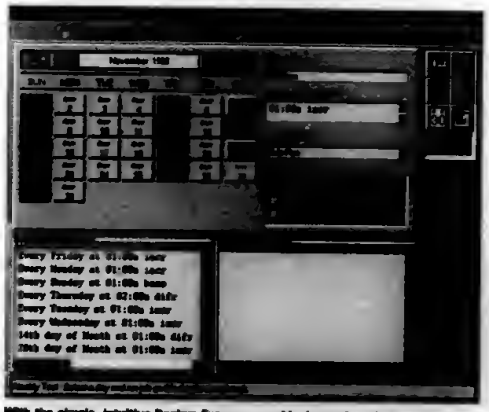
Many sites are faced with the dilemma of backing up lots of data on both of today's most popular network platforms, UNIX and Windows NT®. And that data is likely to be growing at the astonishing rate of 40% a year! How can you back up and restore all your UNIX and NT data fast with one easy-to-use graphical user interface?

Backup servers on UNIX or Windows NT

Built especially for today's multi-platform network environments, Backup Express lets you choose your strategy. You can concentrate your backup tape devices at one server, or you can distribute them throughout your network, connecting them to any UNIX, NT, or NetWare machine you choose. Yet administration is always centralized, and you can control all your backup and restore processing from any machine on your network with TCP/IP.

Distributing devices provides speed and flexibility

Because Backup Express allows you to connect storage devices to any machine on your network, you can minimize network traffic and break I/O bottlenecks. A distributed strategy also lets you increase concurrency and multitasking, so that overall processing time is reduced dramatically. In addition, distributing devices allows you to schedule backups with great flexibility. You can set up "lights out" backup easily, and restore data during the business day without fear of degrading network performance.



With the simple, intuitive Backup Express graphical user interface, you just drag-and-drop and point-and-click to schedule backups, run restores, add devices, or check job status.

Need database backup?

Use Backup Express to do online backups of SAP, Oracle, MS Exchange, Informix and Sybase. Fast offline database backup is also available.

Backup Express is a single solution across platforms — fast, flexible, easy-to-use. You can arrange for a FREE trial of a full-production version of Backup Express. Just visit our web site at

www.syncsort.com/20cwb

or call us at

(201) 930-8200, Dept. 20CWB

You can also request a free reprint of the article "Optimizing Your Network Backup Performance."

syncsort

Most people don't talk about storage until it fails
Maybe that's why you haven't heard of us

Dear Career Adviser:

I'm a programmer developing financial applications on top of Windows. Should I acquire Linux skills to stay ahead of the curve in my career? What's the market for Linux programmers like? Is demand higher for people with expertise in specific applications? — LINUX LOU

Dear Double L:

Naturally, if your principal focus is consumer desktop applications where Windows predominates, it might be hard to justify Linux studies.

"However, if you are thinking about moving to the server side and the Internet, then learning Linux is definitely worthwhile," says Michael Tiemann, chief technology officer at Durham, N.C.-based Red Hat Inc. He cites the increasing interest in open source, the use of Linux for public Web servers and Intel's work with the Linux community to develop the Itanium, the next generation IA-64 chips, among other industry developments.

Take introductory Linux classes emphasizing Internet infrastructure and software development and deployment, counsels Tiemann. Get involved in projects where applications are being written or ported to the Internet and work on obtaining some standard certifications.

Then add classes and experience with the top databases behind the next generation of Internet applications, such as Oracle, and the new wave of embedded technologies in line to deliver a whole new wave of Internet appliances.

In short, says Tiemann, with the abundance of traditional applications rapidly migrating to Linux plus a whole new future of embedded devices just waiting to explode, start your education process now.

A Reader Writes:

Concerning this column's advice to SAP Samantha [Business Advice, Jan. 17], Glenn Sawyer, group manager of enterprise management technical services at Osprey Systems Inc. in Charlotte, N.C., counsels that Basis administration is a critical skill.

"It is the one skill set required from almost Day 1 of an SAP implementation, upgrade or even day-to-day care and feeding of an [SAP enterprise resource planning] system," says Sawyer. "Without Basis, an SAP landscape quickly falls out of sync and becomes a disaster waiting to happen."

In short, Basis plus SAP Samantha's AS/400 skills are very much in demand in the Southeast, where AS/400 is heavily installed and running SAP. Therefore, while other SAP skills are important, there's also high demand for people with Basis talent.

Dear Career Adviser:

I am an experienced mainframe programmer/analyst with technical experience in Cobol, CICS and IMS/DLI. In addition to feeling uncertain of my skills in this particular Web-oriented job market, I have another problem. I am dazed by a recent significant change in my health status, which over time could have a real impact on my ability to continue working in the same way. I am concerned about whether or not to reveal my change in health status at work, and I'm wondering what else I should do.

— DAZED DENNIS

FRAN QUITTEL is an expert in high-tech careers and recruitment. Send questions to her at www.computerworld.com/career_adviser.

Dear Dennis:

In a highly competitive job market, insecurities understandably run rampant when serious health problems arise.

But "save revealing this information for later, when it's unavoidable," says Joe Pellerito, director of consumer technology at Michigan-based I-Can Inc. (*www.icanonline.net*), which provides a multitude of personal and employment-related resources for the disabled. Right now, you must use every second available to strategize how you will handle your evolving workplace and home accommodation needs.

Start by investigating the key term *assistive technology* and the many resources highlighted through the Tech 2000 project, the assistive technology grant from the federal government that is part of the Technology-Related Assistance for Individuals with Disabilities Act passed by Congress in 1988.

Affiliate yourself with nonprofits, support groups, Web organizations and the community assistive technology councils in your state. These will offer ongoing consultations with experts, rehab engineers, occupational and physical therapists and speech language physiatrists who will continually evaluate your physical condition in relation to available enabling technologies.

Visit sites such as *www.webofcare.com* and WebABLE! (*www.webable.com*), a Web directory for disability-related Internet resources, counsels Pellerito, plus sites addressing your particular needs as a computer professional. These include Job Accommodation Network (*http://janweb.icdi.wvu.edu*), which offers information about job accommodations and the employability of people with disabilities, and the Assistive Technology On-Line Home Page (*www.asel.udel.edu/atonline/assistive.html*), which has links to vendors with products that provide alternative methods for using computers or modifying the workplace. ▶

BRIEFS

E-Comm Slowdown

The online e-commerce universe is likely to stop expanding within four years, according to a new report from Forrester Research Inc. in Cambridge, Mass. The report, published last week, predicts the e-commerce market will undergo vast consolidation, especially among consumer-oriented sites.

The report predicts the requirement for 100% uptime will be too expensive for most companies, leading to a rash of mergers. Moreover, it says the number of online buyers and e-commerce sites will both level off. Forrester also predicts that the amount existing buyers spend will increase.

Business-to-business e-commerce is poised to expand, however, because e-commerce business-to-business organizations rely less on expensive marketing gimmicks to attract customers, said Forrester analyst Joe Sawyer.

Europe to Legislate Internet Economy

European industrialists and politicians have announced an initiative to adapt the European economy to cope with the Internet revolution. A group called the European Internet Foundation, which represents 53 members of the European Parliament from across the political spectrum, will press for legislative changes to adapt the multinational European economy to e-commerce.

The group has the financial backing of at least 10 large European companies, including France's Alcatel SA, British Telecommunications PLC, Siemens AG and Telefónica SA. The foundation will identify emerging policy priorities and help frame policy options through dialogue and debate, but it won't take positions on specific issues, a public statement said.

The European Internet Foundation can be found on the Web at *www.eifonline.org/*.

Deutsche Bank Teams With SAP

Deutsche Bank AG and SAP AG have announced they will jointly provide financial and trading services based on SAP's Internet-based mySAP.com e-commerce technology.

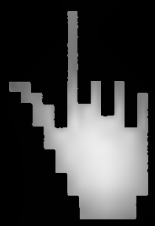
Deutsche Bank will develop applications to provide services such as transaction payment between business partners (clean payments) and escrow services for payments via a trustee account. The applications developed by Deutsche Bank will be made available during this year on electronic marketplaces powered by mySAP.com.

Telecom Web Service

A survey of 51 communications carriers shows that more than 75% expect to offer online capabilities for ordering, trouble reporting, account inquiry and billing by the end of this year. The survey, conducted by CompTel, a trade association in Washington, and American Management Systems Inc., an information technology consultancy in Fairfax, Va., also shows that 75% of the companies are using extranets to build relationships with partners and suppliers.

Health Exchange Deal Announced

Medibuy.com, a San Diego-based digital exchange in the health care market, and Bellevue, Wash.-based online retailer Drugstore.com Inc. have announced a plan to develop a cobranded online marketplace geared toward the home health care market. Under a five-year deal announced last week, Medibuy.com will design a suite of electronic procurement applications specifically for home health care providers, and Drugstore.com will fulfill all orders.



COMDEX

[illegible] pass or to learn more about the events [illegible]
[illegible] Arnie Wolfs [illegible] at 781 433 1573 or [illegible]

TECHNOLOGY

HOW REAL ARE WEB SOLUTIONS?

Mainstream IT vendors claim they can give you almost everything you need to create an e-commerce site. We talk to five customers to see how well these solutions stack up against their real-world needs. ▸ 68

COLOR AND MUCH MORE

Computerworld's Mathew Schwartz says he loves the readability of the new Palm IIIc, tbe company's first handheld that boasts a color display. Even though few applications now take full advantage of the color display, the truer blacks and whites make even plain text stand out more clearly. ▸ 64

Corporate customers may be more interested, though, in the improved security and menu features of another Palm handheld, as well as a $99 portable keyboard that folds to about the size of the Palm. ▸ 65

EMERGING COMPANIES

Tired of junk mail and questionable attacbments flooding your network? Brightmail Inc. thinks it has an answer. Its Anti-Spam Service examines incoming e-mail to determine if it's appropriate and tben updates filtering rules on its clients' e-mail servers. Brightmail is targeting Fortune 1,000 companies. But its real market may he Internet service providers that will offer the service to corporate IT. ▸ 72

HANDS ON

Senior reviews editor Russell Kay has been wrestling with the desktop version of Microsoft's latest operating system, Windows 2000 Professional. Despite both hardware and software compatihility problems, he likes it — but he doesn't recommend it as a do-it-yourself project. ▸ 66

BAN THE BUGS

Distributed denial-of-service attacks may be getting the publicity, but viruses are still a major threat. For those who want to take an integrated approach to fighting hackers, McAfee unveils a new suite of centralized tools for protecting against viruses in networks of up to 100,000 users. ▸ 62

FAULTY DESIGN

The success of the recent distributed denial-of-service attacks against leading Web sites was largely hecause of the poor design of the systems supporting those sites, says an executive at Computer Associates. He says huilding distributed systems can help defeat such attacks. ▸ 63

STELLAR PHOTOS

Thanks to the University of California, San Diego, middle school students in four countries were ahle to request pboto images of Earth from astronauts on the space shuttle *Endeavour* — and get the results in just a few bours. ▸ 63

"BEING IN CRM . . . I am the v . . . of J. Crew," says Dave Towers, w . . . took a business/technology hybrid career path and is now CRM direct . . .

CUTTING-EDGE CAREERS IN CRM

WHILE CUSTOMER RELATIONSHIP MANAGEMENT (CRM) has been around as long as merchants have been doing business, technology is turning it into the driving force for marketing, notes Dave Towers, director of CRM at J. Crew in New York. This means huge opportunities for IT professionals who combine the right technology and business skills. And read QuickStudy (page 67) for an explanation of CRM automation.

78

New McAfee Suite Offers Centralized Virus Protection

BY ANN HARRISON

Despite the recent concern over distributed denial-of-service attacks, computer viruses remain a much more common and costly problem for many companies.

According to Carlsbad, Calif.-based research firm Computer Economics Inc., viruses cost businesses and users more than $12.1 billion worldwide last year alone.

To counter both denial-of-service and virus attacks, some information technology managers are considering centralizing their security efforts [Technology, Feb. 21].

In response, McAfee, which is owned by Network Associates Inc. in Santa Clara, Calif., last week announced the availability of McAfee Active Virus Defense, its flagship integrated suite of antivirus policy management, enforcement and reporting software.

The suite includes ePolicy Orchestrator, which enforces virus policies and updates across a network of up to 100,000 users and allows network administrators to update security policies across the enterprise from a single server.

Because logging virus activity is essential to finding the source of infection, the suite also includes McAfee Anti-Virus Informant, which compiles reports of virus activity.

Preventing Virus Outbreaks

For e-mail-borne viruses, the McAfee GroupShield and McAfee WebShield products offer the new McAfee Outbreak Manager, which monitors incoming and outgoing e-mail for suspicious patterns. Outbreak Manager can also stop new Internet-borne e-mail viruses, based solely on the behavior of an incoming message.

McAfee Active Virus Defense also delivers McAfee AutoImmune technology, which detects and removes previously undiscovered viruses through heuristic techniques, analyzes the suspected virus and returns cures authenticated by the company's Anti-Virus Emergency Response Team in a matter of hours.

VirusScan 4.5 includes an enhanced AutoUpdate feature, which automatically pushes new virus defenses to client machines faster than previous methods because of a reduced signature file size of 100KB.

The VirusScan engine can be embedded in both Linux and Solaris applications and managed services with the McAfee Virus Interface for Protective Early Response tools, which can detect malicious code such as the Trinoo tool, which launches distributed denial-of-service attacks.

"Updates for protection against the newest virus threats are essential for solid security against viruses," said Jim Stough, director of technology services at Texas law firm Locke Liddell & Sapp LLP.

"The McAfee Active Virus Defense product's incremental updating will save our company large amounts of bandwidth by providing us with only what is needed, and up to 20 times faster than before, helping us to respond even quicker to attacks," Stough said.

Network Associates' McAfee VirusScan 4.5 is available as part of the McAfee Active Virus Defense suite of enterprise antivirus products and costs $24 per node at the 5,000-node level. The entire McAfee Active Virus Defense product line will be available at the end of March.

AT A GLANCE

Virus Protection

VirusScan 4.5 protects against malicious code delivered via:

- E-mail
- Internet downloads
- ActiveX
- Java
- JavaScript applets

Just a reminder
when considering which platform
to host your next Web application.

According to Doculabs tests, Web apps built on Microsoft® Windows® DNA performed over 100% faster than on 6 leading app servers running on Sun Solaris.

Microsoft
Where do you want to go today?®
msdn.microsoft.com/vstudio/scale

TRIM ALONG PERIMETER TO COLLECT AND ALERT OTHERS TO THE WHOLESOME GOODNESS OF SAVING MORE THAN HALF THE COST OF THE SUN SOLARIS SOLUTION.

© 2000 Microsoft Corporation. All rights reserved. Microsoft, Where do you want to go today? and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Sun and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. Doculabs © Benchmark Report: Performance and Scalability of Web Servers, 1999. Windows NT® platform scaled: 4 Compaq 6400R servers running Windows NT 4.0, Internet Information Server (IIS) 4.0, Microsoft Transaction Server (MTS), plus 1 Compaq 6400R running Windows NT 4.0, Microsoft SQL Server™ 7.0, plus platform scaled: 1 Sun E3500 server running Solaris 8, 4 Sun Ultra 1 servers running Netscape, 1 Sun E 450 and 2 Sun Ultra 2 application servers running Solaris 2.6, 1 Compaq 6500 and 3 Compaq 7000 running IIS 4.0.

BRIEFS

BEA Unveils WebLogic Server

BEA Systems Inc. in San Jose has unveiled WebLogic Commerce Server 2.0, a new component-based e-commerce transaction server and development environment. Based on the Java 2 Enterprise Edition standard, the server includes components for building online catalogs, shopping carts, order entry functions and inventory management services. WebLogic will be available in April for Windows NT and Solaris. Pricing starts at $40,000 per CPU.

Webley Links Web, Phones

Webley Systems Inc. in Deerfield, Ill., has announced Webley, a messaging system that integrates computers, the Internet and telephony. The system offers speech-to-text and text-to-speech capabilities, as well as personal Web site control features and phone access to a user's e-mail service. Calls are answered by Webley, which can place the caller on hold while it tracks down the user; the user can accept the call or have Webley take a message. Messages can be sent by pager, e-mail, fax or voice; Webley can make calls, receive faxes to be viewed over the Internet and read e-mails over the phone. Pricing hasn't been disclosed.

Microsoft Betas Host Integration Server

Microsoft Corp. has released a public beta version of Host Integration Server 2000, the successor to SNA Server 4.0. The upgrade will include support for Windows 2000 features such as Active Directory and COM+, as well as for the latest versions of Microsoft Message Queue Server and IBM's MQSeries messaging middleware. Host Integration Server 2000 is expected to ship this summer.

CA Exec Says Poor Design Lets Crackers Disable Sites

BY DAVID LEGARD
SINGAPORE

The success of the recent distributed denial-of-service attacks against leading Web sites was largely caused by the poor design of the systems architecture supporting those sites, according to Alan Lloyd, manager of strategic development at Computer Associates International Inc.'s OpenDirectory group.

Systems that are set up to have a single point of entry have no chance of fending off coordinated attacks like those that disabled Web sites belonging to Amazon.com Inc., eBay Inc. and others, Lloyd said at a press conference here last week.

"You have to build distributed systems, because when you attach to the Web, you've got 100 million people coming at you," he said. "Some people just Web-enable their shop front without properly engineering their systems. Nobody can protect those sites from a flooding attack, and so nobody should be building systems like this."

E-commerce security must go hand in hand with customer management, according to Lloyd. Trusted users who have registered at a site should be granted extra user privileges that run on one server, while the general public, which is likely to include malicious intruders, is restricted to the shop front server.

"That way, if someone launches an attack, they may get part of your site, but they won't get it all," Lloyd said. The part of the site likely to be disabled by such an attack would be the public areas, rather than those used by revenue-generating, loyal repeat customers, he noted.

The distributed denial-of-service attacks have increased user fears about conducting transactions over the Internet, according to Lloyd Tanaka, marketing manager for CA's eTrust security products.

"We believe that there will be some short-term effects on e-commerce as a result of these attacks," he said. "Electronic business cannot afford to have this happen again."

Downloads of the Islandia, N.Y.-based company's free intrusion-detection software have increased significantly since the attacks, Tanaka said.

Asian Attacks on the Rise

In Asia, Web attacks are on the rise, according to Richard Jacobson, a senior Internet analyst at Singapore-based International Data Corp. Asia/Pacific, with corporate espionage, cyberactivism and cyberterrorism becoming greater threats.

Re-engineering systems and getting to know more about customers are the best ways to minimize attacks on the open Internet and prevent potentially serious business losses, Tanaka said.

Legard writes for the IDG News Service in Singapore.

NETWORK GRABS NASA PHOTOS

Before NASA's space shuttle Endeavour touched down last week after its historic mapping mission, astronauts helped middle school students from the U.S., Japan, France and Germany collect many high-resolution digital images, such as the one pictured above, for study. The educational initiative, called EarthKAM (*www.earthkam.ucsd.edu/*), is a project developed by the University of California, San Diego (UCSD).

Student mission-control centers at the participating schools were able to submit photo requests through a special Web site managed by UCSD, said Alann Lopes, chief technology officer for the project. UCSD then relayed the requests to the shuttle's mission control, which uplinked them to the spacecraft. Lopes said it took only a few hours for the images to make their way back to Earth, where they were processed, organized and stored on the special EarthKAM network at UCSD.

The network was built around the CoreBuilder 7000 network switch from 3Com Corp. in Santa Clara, Calif., which Lopes said is an Asynchronous Transfer Mode switch that also accommodates Ethernet packet traffic.

Lopes said the digital images taken from the spacecraft have been posted on the Web site for the 11,000 participating students to examine and download. – *James Cope*

Just a reminder the next time you're thinking of a new line-of-business solution.

Microsoft SQL Server Enterprise Edition is now the world record holder for the PeopleSoft HRMS benchmark, with 17,500 concurrent users.

Microsoft
Where do you want to go today?
microsoft.com/sql/worldrecord

Color Me Readable: IIIc's Screen Clears Things Up

A bright color display makes the new Palm the personal organizer you've been waiting for

BY MATHEW SCHWARTZ

BEAUTIFUL — that's the only word for Santa Clara, Calif.-based Palm Inc.'s new IIIc, the first-ever Palm with a color screen. Mind you, I've been using a Palm for more than a year, and I was skeptical that color could really enhance what is essentially an electronic date and address book.

But the IIIc has something that neither Handspring Inc.'s Visor nor any other Palm has: really good readability. Since your eyes love contrast when reading, the IIIc's true black against true white makes it a lot easier to stare at for long periods of time. The monochrome screen on other Palms is really LCD almost-black on LCD gray. Now, there's no need for a backlight in dim situations. This Palm is so bright, it can double as a flashlight.

Aside from readability, what impresses me about the IIIc is the elegant way it uses color. Sure, you get a free JPEG image viewer, but the Palm is primarily an organizer. So even though few applications take advantage of the color yet, some give a taste of its potential. For instance, conflicting appointments in the Datebook application get a red bar beside them, selected text is highlighted yellow and menu bars are blue.

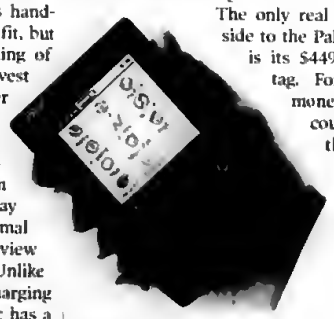
REVIEW

Now for the particulars: The IIIc comes with Palm software and a docking recharging cradle. The Palm's case is a new color: dark slate. It's 7mm longer than previous III Series handhelds, so old III cases may not fit, but any III accessories will. Speaking of which, you'll want to invest $30 in a separate recharger kit so you can keep the IIIc going when you travel. Like the Palm V, the IIIc uses a built-in lithium ion battery. Palm claims the battery will stay charged for two weeks of normal use, though I haven't had my review unit long enough to verify that. Unlike the Palm V, which had a recharging light only on the cradle, the IIIc has a recharging light built into the body of the Palm itself, which provides a welcome visual cue, regardless of recharging method.

The Palm IIIc also ships with Version 3.5 of Palm OS. With the updated operating system, the unit runs faster and can hotsync with a PC more quickly. And some previously third-party features are now standard. These include menu bars that drop down when tapped (vs. having to click a menu button), more file security options and a function that simplifies such tasks as cutting and pasting text.

The Datebook application also sports a new Agenda view that shows appointments and to-do items on one screen. My advice is to spend $20 and replace Datebook with the incredibly full-featured Datebk3, available from Morganton, Ga.-based Pimlico Software Inc. at www.gorilla-haven.org/pimlico. Handspring uses the Datebk3 on its Palm-compatible Visors.

Like that of all Palm IIIs, the exterior of the IIIc has a removable flip top to protect the screen. The up/down rocker switch has been replaced with two separate buttons. On my demo unit, the down button didn't work consistently; I would have exchanged it for a new one.



The only real downside to the Palm IIIc is its $449 price tag. For that money, you could get the smaller Vx or almost two of the new IIIxe's ($249), both of which match the IIIc's 8MB of memory and flash read-only memory (ROM). I highly recommend units with the flash ROM, because it lets you upgrade the hardware's operating system. Some other models, such as the Palm IIIe, Palm VI and all Handspring Visors, don't have flash ROM, so you have to use slower software patches instead of firmware upgrades.

Regardless of price, though, if readability is a primary concern, no other Palm device on the market beats the IIIc's color screen. (For more on the Palm IIIc, see story on page 65.)

Free e-DBMS

Build and run Web apps faster!
Download e free Cache license at www.e-DBMS.com
or call 800 753 2571 for a free license on CD

CACHÉ e-DBMS
Our accent is on E.

THE PAPER AND INK USED IN THE ORIGINAL PUBLICATION MAY AFFECT THE QUALITY OF THE MICROFORM EDITION

Color Me Readable: IIIc's Screen Clears Things Up

A bright color display makes the new Palm the personal organizer you've been waiting for

BY MATHEW SCHWARTZ

BEAUTIFUL — that's the only word for Santa Clara, Calif.-based Palm Inc.'s new IIIc, the first-ever Palm with a color screen. Mind you, I've been using a Palm for more than a year, and I was skeptical that color could really enhance what is essentially an electronic date and address book.

But the IIIc has something that neither Handspring Inc.'s Visor nor any other Palm has: really good readability. Since your eyes love contrast when reading, the IIIc's true black against true white makes it a lot easier to stare at for long periods of time. The monochrome screen on other Palms is really LCD almost-black on LCD gray. Now, there's no need for a backlight in dim situations: This Palm is so bright, it can double as a flashlight.

Aside from readability, what impresses me about the IIIc is the elegant way it uses color. Sure, you get a free JPEG image viewer, but the Palm is primarily an organizer. So even though few applications take advantage of the color yet, some give a taste of its potential. For instance, conflicting appointments in the Datebook application get a red bar beside them, selected text is highlighted yellow and menu bars are blue.

Now for the particulars: The IIIc comes witb Palm software and a docking/recharging cradle. The Palm's case is a new color: dark slate. It's 7mm longer than previous III Series handbelds, so old III cases may not fit, but any III accessories will. Speaking of whicb, you'll want to invest $30 in a separate recharger kit so you can keep the IIIc going when you travel. Like the Palm V, the IIIc uses a built-in lithium ion battery. Palm claims tbe battery will stay charged for two weeks of normal use, though I haven't had my review unit long enough to verify that. Unlike the Palm V, which had a recharging light only on the cradle, the IIIc has a recharging light built into the body of the Palm itself, which provides a welcome visual cue, regardless of recharging method.

The Palm IIIc also ships with Version 3.5 of Palm OS. With the updated operating system, the unit runs faster and can hotsync with a PC more quickly. And some previously third-party features are now standard. These include menu bars that drop down when tapped (vs. having to click a menu buttoo), more file security options and a function that simplifies such tasks as cutting and pasting text.

The Datebook application also sports a new Agenda view that shows appointments and to-do items on one screen. My advice is to spend $20 and replace Datebook with the incredibly full-featured Datebk3, available from Morganton, Ga.-based Pimlico Software Inc. at *www.gorilla-haven.org/pimlico/*. Handspring uses the Datebk3 on its Palm-compatible Visors.

Like that of all Palm IIIs, the exterior of the IIIc has a removable flip top to protect the screen. The up/down rocker switch has been replaced with two separate buttons. Oo my demo unit, the down button didn't work consistently; I would have exchanged it for a new one.

The only real downside to the Palm IIIc is its $449 price tag. For that money, you could get the smaller Vx or almost two of the new IIIxe's ($249), both of which match the IIIc's 8MB of memory and flash read-only memory (ROM). I highly recommend units with tbe flash ROM, because it lets you upgrade the hardware's operating system. Some other models, such as the Palm IIIe, Palm VI and all Handspring Visors, don't have flasb ROM, so you have to use slower software patches instead of firmware upgrades.

Regardless of price, though, if readability is a primary concern, no other Palm device on the market beats the IIIc's color screen. (For more on the Palm IIIc, see story oo page 65.)

Free
e-DBMS

Build and run Web apps faster!
Download a free Caché license at www.e-DBMS.com,
or call 800.753.2571 for a free license on CD.

CACHÉ e·DBMS

Our accent is on E.

Users Like Security, Menus in New Palms

BY MATT HAMBLEN

Palm Inc. released its first color handheld, the Palm IIIc, last week. But corporate customers are showing more interest in the Palm IIIxe and its oew security and user functions.

"I wouldn't care as much about a color screen," said Alex Hu, a senior technology officer at The Chase Manhattan Bank in New York. "We're more interested in getting data oo handhelds," said Hu, who uses a Palm V to track cootact information and read e-mail.

Chase Manhattan has assigned a technical committee to consider ways the company can use handheld computers as mainstream business productivity tools and move away from just supporting the handbelds users buy on their own.

The IIIc, which sells for $449 and features a 256-color display, will make a bigger impact on consumers, analysts said. So far, the biggest-selling color-display handhelds in the U.S. are Windows CE machines, whicb are made by several companies.

Palm, a subsidiary of 3Com Corp. in Santa Clara, Calif., described the $249 IIIxe as ideal for customers who work with many applications or have large data needs. It's intended to replace the IIIx.

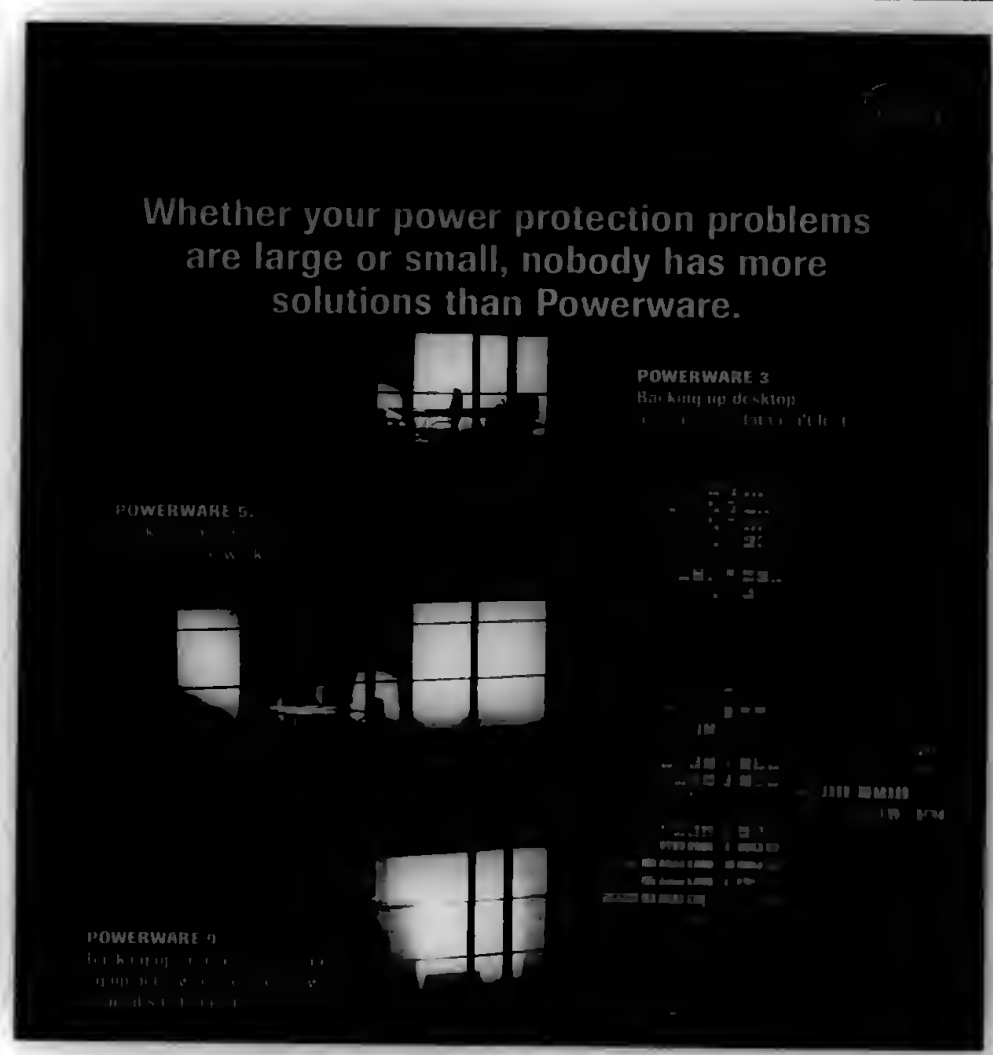
Features of the Palm IIIxe that several users and analysts singled out as impressive include:

- The new ability to password-protect individual pieces of data.
- Standard memory of 8MB — double that of earlier models.
- A doubling of the previous synchronizatioo speed to 115K bit/sec. using the desktop cradle.
- Upgradable flash read-only memory for compatibility with future versions of Palm OS software.
- An Agenda view in the user interface that allows users to see their appointments and a to-do list in one screen.
- Access to menu views by making a simple tap at the top of the screen, rather than using a button command.
- An optional $99 QWERTY portable keyboard that folds up to oearly the same size as the Palm IIIxe. "If my users were ever issued handhelds, they'd never want to write in Palm's Graffiti [a handwriting recognitioo tool] if they could have a keyboard instead," Hu said.

But Keo Dulaney, an analyst at Gartner Group Inc. in Stamford, Conn., questioned the value of password-protecting a single entry or file.

Rather than worrying about somebody stealing a handheld from a user for the files on it, the bigger security concern is "what data can be taken off a corporate server with a handheld," be said.

A $149 snap-on digital camera from Eastman Kodak Co. in Rochester, N.Y., will be available for the IIIc late next month. It could be valuable for mobile insurance or real-estate agents, analysts said.



Evan the most experienced IT professional probably isn't aware of all the potential power threats out there — from aubtle distortions that damage data, to full-blown blackouts that shut down a business.

Luckily, there's Powerware. We are the UPS experts. Offaring not just products, but top-to-bottom solutiona: Series 3 for the most common power threats (failures, surges and sags); Series 5 for mid- to high-level protection; and Serias 9 for the most mission-critical operations.

What's more, we'll help you detarmine the precise level of protection you need, complete with our unmatched monitoring and shutdown software and on-site support.

To learn more, check out **www.powerware.com/359**. Or call us at **877-PWRWARE (877-797-9273)**. It'a the kind of move that can earn you the corner office.

POWERWARE®
POWERING THE WORLD

Win 2k Pro: I Want It, but I'll Wait

Windows 2000 Professional may prove to be a great desktop operating system, but don't make it a do-it-yourself project.

BY RUSSELL KAY

I'VE BEEN WORKING with Windows 2000 for a year now in various beta releases, and most recently with the final, go-to-market code, all direct from Microsoft Corp. and factory-installed on new systems. I've written about my conclusions and reservations, primarily concerning the server and advanced server versinns and what they mean for enterprises and their networks. One area I haven't discussed until now is my experience with the desktop client, Windows 2000 Professional.

REVIEW

What's Good

Here's what I like: When it works, Windows 2000 Professional is the best desktop operating system I've ever tried. On the whole, Microsoft has nicely refined the Windows 9x graphical user interface, making the start menn more useful. This edition boots up considerably faster than Windows NT.

Besides having its own NT file system (NTFS 5), which is invisible to Windows 9x, Win 2k can read FAT32 disk partitions. This means that on my home dual-boot system, I'm no longer forced to use the space-wasting FAT16 file system just to maintain compatibility between the two operating systems.

And on my home system's 18-in. monitor, the screen image seems sharper while Win 2k is running than the same image does under Windows 98. (I don't have any tools with which I might measure any difference, but I have previously observed that subjective improvement with Windows NT. Is this video voodoo? I don't know.) Win 2k is considerably more stable, requiring far fewer reboots than Windows 98. Finally, plug-and-play works well in Win 2k.

What's Bad

That said, it's worth noting that Windows 2000 Professional works well only on a limited set of hardware. Too much of the time, it comes off as plug-and-don't-play. And therein lies a tale: One of the all-important references that comes on the Windows 2000 CD is a file called the hardware compatibility list. It's also available online at *www.microsoft.com/windows2000/*. If a system or component isn't on this very long list, Windows 2000 Professional won't work with it — and Microsoft isn't kidding. Don't think that a product must be compatible just because it's brand-new. 'Tain't so.

My dual-boot system (Windows 98/2000) has several new peripherals attached to it for evaluation and everyday use: an Acer America Corp. 620 Universal Serial Bus flat-bed scanner, an Acer ScanWit 2720 SCSI film scanner and an Iomega Corp. ZipCD IDE rewritable CD drive. None of these is especially unique, and none could be called "legacy" equipment; all were introduced late last year. Yet not one of them is on the official list, and, not surprisingly, not one will work under Windows 2000 Professional. This is why I maintain a dual-boot system.

And What's Really Ugly

A year ago, when Win 2k Beta 3 was first released to reviewers, I was hounded by many of these same hardware problems. At one point, I installed Win 2k Pro three times, only to discover at the conclusion of each installation process that the operating system couldn't load because of a hardware incompatibility. Of course, it didn't tell me what the offending hardware was. That would've been too simple.

That experience was far more frustrating than it might sound at first, because you can't uninstall Windows 2000 Professional the way you can Windows 98. If an installation doesn't work, your only recourse is to wipe out everything hy going back to the fdisk command, repartitioning and reformatting the disk drive and then reinstalling the operating system and all your applications.

In its own way, this reminds me of the on-screen warning that appears with many stunts portrayed on televisinn: "Do not attempt this at home; these are trained professionals." That's how I've felt, several times, about Win 2k — even though I'm one of those trained professinnals!

So that's why, as I write this column on my 5-month-old, *Computerworld*-issued notebook, I'm using Windows 98 instead of Windows 2000. I'm pretty sure Win 2k would install without major problems — but I'm not quite ready to fully believe it or to risk the expenditure of time that would be required to recover from an unsuccessful installation on this, my everyday production machine.

To be fair to Microsoft, you can download the Windows 2000 Readiness Analyzer, a 2.5MB program that purports to tell you whether your system is acceptable to Windows 2000 (*www.microsoft.com/windows2000/upgrade/compat/ready.asp*).

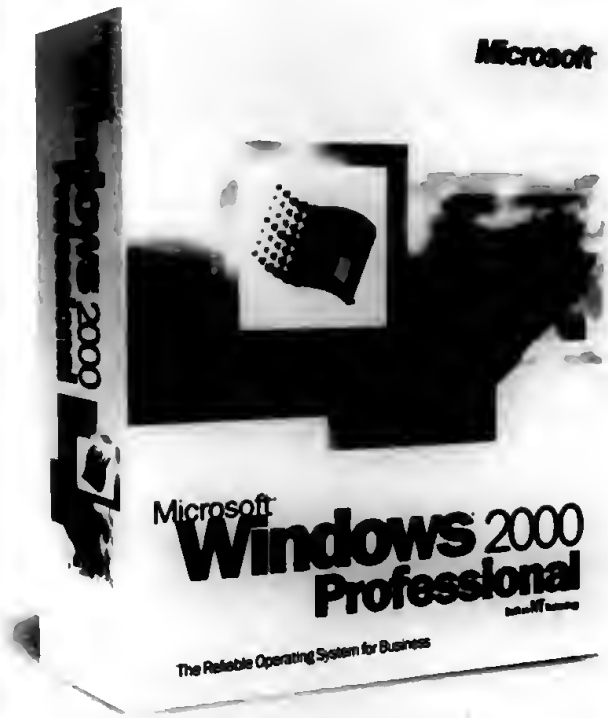
I ran this program (which took 17 minutes on my 400-MHz machine), and it told me that I have a number of applications that won't run under Win 2k Pro (including my antivirus software) and that some need additional files to update them so they'll run. The analyzer reported, most unhelpfully, that my NEC Corp. 1260 laser printer may not run without new drivers. That's curious, because the same printer runs just fine on Windows 2000 Professional on my home machine, and it was installed directly from Win 2k's built-in drivers. Also, the report discussed potential problems with a number of pieces of software it said were registered as hardware (whatever that means).

Did this report help me decide whether it's safe to upgrade? No; it just added to the uncertainty.

Preinstalled Is Best

The bottom line is that even though I think Windows 2000 Professional will prove to be the best overall desktop operating system Microsoft has ever produced, I'm not yet ready to install it ou my office laptop. I want Win 2k, but I need to know it will work. And I'm not willing to risk what could end up being a two- or three-day outage recovering from a failed installation and a reinstallation of all my applications. The more I think about it, the less I want to be a systems integrator.

So my advice is this: If you really want Windows 2000 Professinnal on your desktop, order a computer that comes with the operating system and all the necessary peripherals installed. That way someone else can work out the compatibility problems before you ever see them.



Customer Relationship Management

BY ROBIN ROBINSON

CUSTOMER Relationship Management (CRM) strategies have been around since the first bazaar, but products designed to automate CRM efforts are among today's hottest new computer applications. Companies are rushing to automate and better manage all the ways they deal with customers, including people who might not consider themselves customers yet.

In a perfect world, CRM marshals marketing materials, tracks customers' histories and coordinates a company's multipronged interactions with its customers.

But the vendors that are rushing to offer CRM applications haven't quite achieved this level of integration, says Wendy Close, an analyst at Gartner Group Inc. in San Jose.

Ongoing Process

Because CRM's tentacles reach into so many areas of a business, a CRM system isn't something that can be implemented out of the box. Automating CRM is an ongoing process, says Close, adding that no single vendor is able to supply all the pieces.

"I think customers have to understand that CRM is a business strategy, and these business strategies don't happen overnight," Close says.

"A lot of clients think they can go to a vendor and get CRM. ... Instead, they get a few components. They buy a suite of front-office applications. But do they have all the channels and the technology, all the functionality and the services to really enable CRM?" she asks. "It takes multiple technologies and multiple vendors to pull this off."

When integrating a CRM system, a company must first review the business processes, applications and technologies it uses to deal with customers. It should also consider its schedule, its budget and what it hopes to gain from a CRM implementation.

It's also worth noting that CRM used to focus on the telephone as the primary means of contact, with little attention paid to e-mail or the Web. However, electronic messaging is overtaking voice as the most common form of communication. Corporate call centers aren't going out of business, but they need new people and equipment to deal with e-mail and Internet inquiries.

The three main areas that CRM systems focus on are sales, customer service and marketing automation.

Sales, also called sales force automation, includes the following five areas:

- Field sales.
- Call center telephone sales.
- Third-party brokers, distributors or agents.
- Retail.
- E-commerce, which is sometimes referred to as technology-enabled selling.

Customer service and support includes the following:

- Field service and dispatch technicians.
- Internet-based service or self-service via a Web site.
- Call centers that handle all channels of customer contact, not just voice.

Marketing automation differs from the other two categories because it doesn't involve customer contact. It focuses on analyzing and automating marketing processes.

Marketing automation products include the following:

- Data-cleansing tools.
- Data analysis or business intelligence tools for ad hoc querying, reporting and analyzing customer information, plus a data warehouse or data mart to support strategic decisions.
- Content-management applications that allow a company's employees to view and access business rules for marketing to customers.
- A campaign management system, which is a database management tool used by marketers to design campaigns and track their impact on various customer segments over time.

Depending on a company's goals, the tools it chooses would be integrated across the main areas of sales, service and marketing. The technology includes databases, data warehouses, servers and other hardware, telephony systems, software for business intelligence, workflow management and e-commerce, middleware and system administration management tools.

Integration Is What Counts

Putting all these facets into one coherent, organized presentation to the customer could require the services of a systems integrator. It would most certainly require training everyone from webmasters to call center workers to field sales technicians, Close says.

There are CRM success stories, she says, but success in a CRM implementation may best be measured by the restraint an organization shows in its goals and expectations.

"They don't go out and say 'I'm going to do it all.' They pick. They don't try to tackle all of CRM at once," Close says.

For example, a pharmaceutical company might integrate its database marketing with its field sales automation, a traditional problem in that industry, she says.

She notes that small and midsize companies have been able to implement more complete CRM systems because they may not operate globally and may be newer organizations that have fewer business processes to contend with.

"So they may be willing to implement an application and willing to use the package to drive the processes, as opposed to larger companies, which try to make the application fit into their processes," Close says.

DEFINITION

Customer Relationship Management (CRM) refers to applications that businesses can use to manage all aspects of customer encounters. A CRM system can include everything from technology for gathering data from cold calls in field sales to self-service Web sites where customers can learn about and purchase products to customer analysis and campaign management systems.

The Elements of CRM

MORE THIS ISSUE

The emergence of CRM is creating new job opportunities for IT pros. See page 78.

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

Customer Relationship Management

BY ROBIN ROBINSON

CUSTOMER Relationship Management (CRM) strategies have been around since the first bazaar, but products designed to automate CRM efforts are among today's hottest new computer applications. Companies are rushing to automate and better manage all the ways they deal with customers, including people who might not consider themselves customers yet.

In a perfect world, CRM marshals marketing materials, tracks customers' histories and coordinates a company's multipronged interactions with its customers.

But the vendors that are rushing to offer CRM applications haven't quite achieved this level of integration, says Wendy Close, an analyst at Gartner Group Inc. in San Jose.

Ongoing Process

Because CRM's tentacles reach into so many areas of a business, a CRM system isn't something that can be implemented out of the box. Automating CRM is an ongoing process, says Close, adding that no single vendor is able to supply all the pieces.

"I think customers have to understand that CRM is a business strategy, and these business strategies don't happen overnight," Close says.

"A lot of clients think they can go to a vendor and get CRM. ... Instead, they get a few components. They buy a suite of front-office applications. But do they have all the channels and the technology, all the functionality and the services to really enable CRM?" she asks. "It takes multiple technologies and multiple vendors to pull this off."

When integrating a CRM system, a company must first review the business processes, applications and technologies it uses to deal with customers. It should also consider its schedule, its budget and what it hopes to gain from a CRM implementation.

It's also worth noting that CRM used to focus on the telephone as the primary means of contact, with little attention paid to e-mail or the Web. However, electronic messaging is overtaking voice as the most common form of communication. Corporate call centers aren't going out of business, but they need new people and equipment to deal with e-mail and Internet inquiries.

The three main areas that CRM systems focus on are sales, customer service and marketing automation.

Sales, also called sales force automation, includes the following five areas:

- Field sales.
- Call center telephone sales.
- Third-party brokers, distributors or agents.
- Retail.
- E-commerce, which is sometimes referred to as technology-enabled selling.

Customer service and support includes the following:

- Field service and dispatch technicians.
- Internet-based service or self-service via a Web site.
- Call centers that handle all channels of customer contact, not just voice.

Marketing automation differs from the other two categories because it doesn't involve customer contact. It focuses on analyzing and automating marketing processes.

Marketing automation products include the following:

- Data-cleansing tools.
- Data analysis or business intelligence tools for ad hoc querying, reporting and analyzing customer information, plus a data warehouse or data mart to support strategic decisions.
- Content-management applications that allow a company's employees to view and access business rules for marketing to customers.
- A campaign management system, which is a database management tool used by marketers to design campaigns and track their impact on various customer segments over time.

Depending on a company's goals, the tools it chooses would be integrated across the main areas of sales, service and marketing. The technology includes databases, data warehouses, servers and other hardware, telephony systems, software for business intelligence, workflow management and e-commerce, middleware and system administration management tools.

Integration Is What Counts

Putting all these facets into one coherent, organized presentation to the customer could require the services of a systems integrator. It would most certainly require training everyone from webmasters to call center workers to field sales technicians, Close says.

There are CRM success stories, she says, but success in a CRM implementation may best be measured by the restraint an organization shows in its goals and expectations.

"They don't go out and say 'I'm going to do it all.' They pick. They don't try to tackle all of CRM at once," Close says.

For example, a pharmaceutical company might integrate its database marketing with its field sales automation, a traditional problem in that industry, she says.

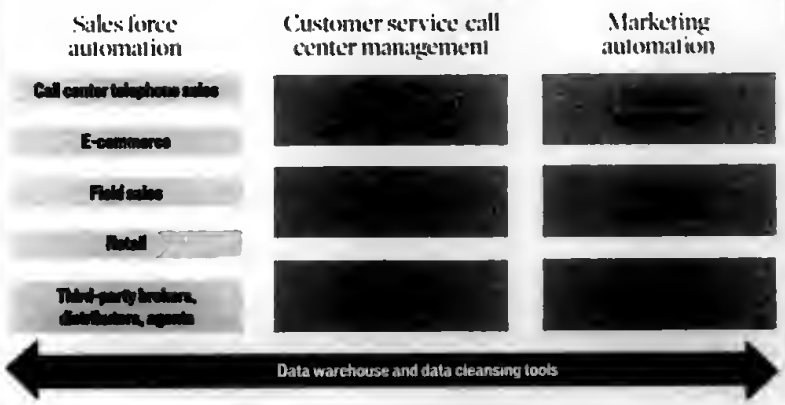
She notes that small and midsize companies have been able to implement more complete CRM systems because they may not operate globally and may be newer organizations that have fewer business processes to contend with.

"So they may be willing to implement an application and willing to use the package to drive the processes, as opposed to larger companies, which try to make the application fit into their processes," Close says.

DEFINITION

Customer Relationship Management (CRM) refers to applications that businesses can use to manage all aspects of customer encounters. A CRM system can include everything from technology for gathering data from cold calls in field sales to self-service Web sites where customers can learn about and purchase products to customer analysis and campaign management systems.

The Elements of CRM



MORE
The emergence of CRM is creating new job opportunities for IT pros. **See page 78.**

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

E-COMMERCE SOLUTIONS: HOW REAL?

Creating a business-to-consumer e-commerce Web site

Hewlett-Packard

HARDWARE

Full range of offerings, from Windows NT-based HP NetServer to enterprise-class HP 9000 Unix servers, and online and off-line storage systems.

SOFTWARE

Web server: OpenMarket Secure Web server.

Storefront: Commerce for the Millennium program sold through Internet service providers (features pre-integrated package that includes storefront building, credit-card processing and payment processing).

Middleware/transaction services: HP SmartContact (contact management infrastructure).

Database: None.

Tools: None.

Other applications include: OpenView for network, application, storage and electronic services management. HP Praesidium family for security. MC/Service Guard for monitoring hardware components. HP OpenPix Internet imaging software suite. Chai Java-based embedded software that lets mobile devices communicate. HP WebQoS optimizes use of server resources.

SERVICES

HP Consulting will do feasibility studies and analysis, architect, build and manage the system. Also has E-services Support Center.

IBM

HARDWARE

Full range of offerings, including Netfinity PCs, AS/400 for small and midsize businesses, RS6000 for Unix customers and System 390 for large enterprises. Also has full range of storage options.

SOFTWARE

Web server: Lotus DominoGo Web server.

Storefront: WebSphere Commerce Suite (formerly known as Net.Commerce) for storefront and catalog creation, relationship marketing and order management. Can add Commerce Integrator to integrate with back-end systems and Catalog Architect for content management.

Middleware/transaction services: WebSphere application server manages transactions. MQ Series queues messages and manages connections. CICS processes transactions.

Database: DB2.

Tools: WebSphere Studio includes set of predefined templates and common business logic.

Other applications include: IBM Payment Suite for handling credit cards and managing digital certificates.

SERVICES

IBM Global Services, which includes groups organized by each major industry, including retail and financial. Can design, build and host applications.

Most major vendors claim they have almost all you need for a business-to-consumer e-commerce Web site. We asked five of them for customers who used their 'solutions.' Here's how those customers fared. By Carol Sliwa

Erik Erlendsson

Director of information technology, The Luggage Center Inc., San Jose

PRIMARY VENDORS: BroadVision Inc. and Hewlett-Packard Co.

APPROACH TAKEN: The company chose BroadVision customer interaction management software. The decision to use HP hardware followed.

SITE LAUNCH: Fall 1999

NUMBER OF PRODUCTS SITE SELLS: 1,000

TECHNOLOGY USED: Netscape Communications Corp.'s Web server, BroadVision 4.1 one-to-one commerce software and Oracle Corp.'s Oracle8i database running on two HP 9000 N-Class servers. Other applications include Retail Technologies International Inc.'s Retail Pro software for point of sales, merchandising and inventory control and Great Plains Software Inc.'s financial applications.

Annapolis, Md.-based application hosting firm USinternetworking Inc. helped develop the site and now hosts it.

ADVANTAGES: Redwood City, Calif.-based BroadVision offers "the most comprehensive ability to provide a personalized shopping experience" for customers, Erlendsson says.

HP is a good choice because future versions of BroadVision will be developed first for the HP and Sun Microsystems Inc. versions of Unix. Erlendsson says he also was impressed with HP's expandability and upgradability. "Our next step, as traffic increases and we warrant additional investment, will be to bring in two more N-Class servers to run in parallel to the current setup to get the fail-over capability," he explains. As HP introduces faster processors, "we can very easily upgrade to that bigger, better, faster chip without having to replace the whole system."

DISADVANTAGES/TRADE-OFFS: "There's always a potential for miscommunication" when dealing with multiple vendors, says Erlendsson. The Luggage Center found that out, he says, when it tried to run the 64-bit version of BroadVision on 64-bit HP-UX before it had been certified on that platform, due to miscommunication between BroadVision and USinternetworking. The problem was resolved by the holiday shopping season.

The Luggage Center's brick-and-mortar operation uses Windows-based software that isn't integrated with the Web site's Unix systems. An all-Windows environment might have eased integration, but that potential advantage didn't outweigh BroadVision's personalization capabilities and Unix's scalability, Erlendsson notes.

To connect its Retail Pro inventory system and BroadVision order-taking system, The Luggage Center is building middleware to perform hourly downloads from BroadVision and is working toward real-time integration, he says.

BOTTOM LINE: "To rely on one organization to produce everything for you, I think you're limiting the possibilities," Erlendsson says. "What is vitally important is that these disparate organizations work closely enough together. BroadVision and HP are two companies that have created a tight working relationship."

Jaake Jacobson

Vice president, Internet technology, Mocys.com, San Francisco

APPROACH TAKEN: The company used IBM as its prime contractor.

SITE LAUNCH: Fall 1996; relaunched with IBM technology in November 1998

NUMBER OF PRODUCTS SITE SELLS: 35,000, expected to increase to 100,000 by year's end

TECHNOLOGY USED: IBM's WebSphere (includes Net.Commerce storefront engine, WebSphere application server and DB2 database) and Lotus Domino Go Web server running on IBM RS/6000 hardware. Other applications include IBM Surf Aid (for Web

E-Commerce Solutions, page 70

Microsoft	Oracle	Sun Microsystems/Netscape (iPlanet)
HARDWARE	**HARDWARE**	**HARDWARE**
None.	None.	Full range of Sun offerings, including low-end desktop and workgroup servers, midrange E3500, E4500, E5500 and E6500 servers and mainframe-class E10,000 server. Also has storage systems.
SOFTWARE	**SOFTWARE**	**SOFTWARE**
Web server: Internet Information Server (part of Windows NT and Windows 2000). **Storefront:** Site Server, Commerce Edition (next version to be renamed Commerce Server 2000) for building catalogs and shopping carts. **Middleware/transaction services:** COM+ (the next generation of Microsoft Transaction Server), Microsoft Message Queue (part of Windows NT, Windows 2000) and Host Integration Server 2000 (formerly known as SNA Server) for legacy integration with host and mainframe environment. **Database/back-office applications:** SQL Server. **Tools:** Visual Studio 6.0 with Windows 2000 Developer's Readiness Kit. **Other applications include:** Microsoft Application Center 2000, due later this year, which was designed to manage Web server farms.	**Web server:** None. **Storefront:** iStore for building catalogs, tracking transactions, computing tax, personalizing and managing content and configuring products. Can add iMarketing for managing targeted promotional campaigns, iPayment electronic payment software and Oracle Bill Presentment & Payment server. **Middleware/transaction services:** Oracle Application Server. **Database:** Current version is Oracle 8i. **Tools:** iStore has tools for store management; Oracle Web DB has tools for building custom sites. **Other applications include:** Oracle Financials, Oracle Sales, Oracle Service, Oracle Inventory and Oracle Order Management.	**Web server:** iPlanet Web Server (formerly Netscape Enterprise Server). **Storefront:** iPlanet MerchantXpert (formerly Netscape MerchantXpert). **Middleware/transaction services:** iPlanet Application Server (Also NetDynamics Application Server, Netscape Application Server) **Database:** None. **Tools:** Recently acquired Forte tools and NetBeans for building Java components. **Other applications include:** iPlanet Certificate Management Solution, iPlanet BillerXpert for Internet bill presentment and payment, iPlanet PublishingXpert for digital goods delivery and selling and iPlanet Portal Server to help companies set up personalized hub sites.
SERVICES	**SERVICES**	**SERVICES**
Has Ebusiness Solutions Group, lab competency centers for testing applications, The Microsoft Network to help companies reach consumers, Transpoint bill presentment and Passport for payment and authentication.	Oracle Consulting has dedicated consultants for customers undertaking e-commerce initiatives.	iPlanet Professional Services, Sun Professional Services. Also, Sun has "dotcom" practice to strategize and build e-commerce sites.

E-COMMERCE SOLUTIONS: HOW REAL?

Continued from page 69

log analysis), Kana Communications Inc.'s customer relationship management tool and Digital Impact Inc.'s personalized e-mail marketing software.

ADVANTAGES: "All of our host systems are on IBM," Jacobson says. "It was easier [to stick with IBM] than try to tie IBM together with some other solution. When you're trying to integrate a lot of different software and hardware vendors, you're going to spend a lot more of your development resources trying to get these systems to work together."

Macys.com originally used Computer Associates International Inc.'s NetCart e-commerce engine running on Sun Microsystems Inc.'s Ultra II hardware with Microsoft's SQL Server database on the back end. But once its parent company, Federated Department Stores Inc., recognized the importance of e-commerce and provided funding and support, Macys.com switched to an IBM environment for scalability reasons.

"All we could handle was 1,000 SKUs [on the original site] because that process was so manual that a thousand SKUs kept a lot of people busy. Now we have direct data links from the Web site to the host system," Jacobson says.

"We use a lot of IBM products within Federated, so we're able to integrate easier with that legacy data. By having seamless integration, we are able to give our customers more real-time access to data," he notes. "Being completely on an IBM platform allows us quicker turnaround in our development efforts."

DISADVANTAGES/TRADE-OFFS:

■ IBM's "AIX is not one of the most popular Unix operating systems, so when you want to buy third-party customer relationship management or personalization solutions, you have to wait for them to be running on AIX," Jacobson says. But sticking with AIX was still worth it "because we were able to access so much more of the Federated data," he says.

IBM response: IBM is making "heavy investments" to persuade leading software companies to write applications for AIX, says IBM Vice President Dave Liederbach. He also notes that WebSphere runs on Windows NT, Solaris, AIX, AS/400 and System 390.

■ Jacobson says he feels tools for changing or updating content are inadequate. So Macys.com built a tool to update SKUs in near real time by pulling data from the mainframes, rather than having staffers enter information into Excel spreadsheets. Macys.com customized FileMaker Inc.'s relational database and tools to create a collaborative interface that employees can use to publish content.

IBM response: IBM is providing improved capabilities in Version 4.0 of WebSphere Commerce Suite, as well as partnering with other vendors.

■ IBM's Net.Data tool for collecting and displaying electronic catalog information is "very complicated" to use to update storefront functionality, such as the types of credit cards accepted, "because the hard-coded templates are all interdependent with the product data," Jacobson says. "One change to a Net.Data macro can mean that we have to make hundreds of other changes to other Net.Data macros." Macys.com is moving from Net.Data's scripting language to a JavaBean component model that will help it build a more flexible, plug-and-play environment.

IBM response: The new version of WebSphere Commerce Suite, which shipped Feb. 1, uses Java Server Pages for display and templating, says Liederbach.

■ Macys.com soon plans to switch from Lotus Domino Go Webserver to The Apache Software Foundation's open-source Web server. "As much as I can make this a standard, nonproprietary environment, I will," Jacobson says. "Every vendor would like to work with you exclusively long-term. But I prefer to embrace technologies that are open-standard, like Java, XML, Apache and Linux. Open standards allow you much more flexibility."

IBM response: "That comment is spot on in terms of where we are taking our customers, exactly for the reasons he described," Liederbach says. "We have packaged with WebSphere Commerce Suite the IBM version of the Apache Web server. We announced a strategic relationship in 1998 to work with the Apache open-source [project] to produce an industrialized and commercialized version of [its] Web server.

JACOBSON: IBM won with its scalability

"We install on top of the standard Apache Web server," Liederbach notes, adding that IBM similarly supports Java and the XML content-tagging language and has stated its intention to support Linux.

BOTTOM LINE: "When we started the conversion from Computer Associates' NetCart [e-commerce software] to IBM's Net.Commerce, the organization gave us four months to do it," Jacobson says. "The only way we really could make that happen in that time frame and scale it was to make the back end of it as vanilla as possible. It's been my experience that the most scalable environments to date are the Sun and IBM infrastructure platforms."

Jim Schanzenbach

Chief technology officer
DrugEmporium.com Inc., Columbus, Ohio

PRIMARY VENDOR: Oracle Corp.

APPROACH TAKEN: The company selected an Oracle database for scalability reasons. That led to the choice of Oracle's applications.

SITE LAUNCH: 1997; relaunched in August 1999

NUMBER OF PRODUCTS SITE SELLS: 20,000

TECHNOLOGY USED: Oracle's iStore commerce engine, Oracle Application Server and Netscape's Web server, running on three Sun E4500 servers with load balancers from Veritas Software Corp.

DrugEmporium.com chose the Oracle8 database running on two Sun E4500s in fail-over mode. Oracle purchasing, inventory management, order entry and financials modules run on two more Sun E4500s in fail-over mode.

For storage, DrugEmporium.com is using EMC Corp.'s Symmetrix RAID disk arrays at EMC's hosting facility in Hopkinton, Mass. EMC also hosts and monitors the Web site.

Other applications include Engage Technologies Inc.'s AdManager, ProfileServer and DecisionSupportServer and Kana Communications' e-mail contact management software running on Windows NT on Compaq Computer Corp. hardware.

ADVANTAGES: DrugEmporium.com has 20,000 SKUs, each of which has many attributes. The Oracle database's multithreading capabilities help handle the many simultaneous parallel queries going on, Schanzenbach says.

"We built real-time interfaces between iStore and the order entry system on the back end, so when you place an order, it immediately goes to the order entry system, which sends it to the fulfillment system," says Schanzenbach. "When we manifest the product for shipment, it sends off another process, updating accounts receivable, doing the credit-card settlement process, sending out an e-mail telling the customer that the product shipped."

Schanzenbach adds, "I honestly believe it would have cost four months to market if we had built a lot more customization and tried to integrate" disparate products.

The original DrugEmporium.com site, built on Microsoft's Windows NT and SQL Server, was text-oriented with very little graphics. "It wasn't the site we wanted in terms of the user experience. And it would not have scaled," Schanzenbach says. DrugEmporium.com opted for Oracle running on Sun Solaris servers so it "can add boxes without having to deal with some of the cluster issues that NT has now," he explains.

Sitting behind the new Oracle-based system are EMC Symmetrix RAID arrays responsible for more than a terabyte of disk storage. Schanzenbach calls the EMC storage system "a real workhorse," noting, "You obviously pay some additional money and expense to get into a piece of equipment like that, but it's your data, and if that goes down, your site's down.

"We really wanted to build something that would scale on the back end," he explains. "There's a lot of focus on making sure the site is scalable, but the back-office operational process needs to scale as well, so we really didn't cut any corners on the back end when it came to customer service and fulfillment."

Schanzenbach notes, "I just think by working with as few vendors as we possibly could and really building a partnership relationship with those few vendors, . . . you come up with a better product, as opposed to the best-of-breed approach, where you deal with a lot of vendors. When you've got 10, 12 vendors, you start hitting problems with the integration of these products."

DISADVANTAGES/TRADE-OFFS:

■ Schanzenbach says he isn't satisfied with iStore's shopping cart and check-out setups because they don't provide the company the flexibility it wants. For instance, DrugEmporium.com wanted to let its customers add merchandise to their shopping carts as they browse, without having to go to the shopping cart page. But DrugEmporium.com had to do custom coding to achieve that feature. "I think anyone who's built one of these big sites with one of the big e-commerce engines has encountered the same issues," Schanzenbach says. "But . . . I believe we picked the best product, given our [time] constraints."

Oracle response: "Our upcoming release, iStore III [due in May], will contain more default store setups and will be more flexible," according to an Oracle spokeswoman.

■ DrugEmporium.com employed Oracle's professional services group to write custom code and used its product development group to help set up iStore — and sometimes the two groups came into conflict over which was to blame for problems. "We've had issues that we believed were directly related to iStore, the product, that we had problems getting resolution on because there's always a back and forth, [with the product group saying,] 'Well, it's the cus-

tom code,' " Schanzenbach says.

"When you get into performance issues, you get into the problem of, is it iStore or the code you built?" he explains. "In some ways, it's like dealing with two separate vendors. The irony is that they're both Oracle, and you would think it wouldn't be that way, or certainly it shouldn't be."

Oracle response: If an issue arises involving both an Oracle product and code written by Oracle Consulting, "it takes time and analysis" to determine where the problem is, notes an Oracle spokeswoman.

BOTTOM LINE: "We went back to the drawing board, saying, 'We need to build something competitive and do it fast,' " Schanzenbach says. "The one thing we weren't going to compromise on was database scalability. We went with Oracle there, and then we really looked for applications to fill out."

Richard Viard

Senior vice president of research and development, SmarterKids.com Inc., Needham, Mass.

PRIMARY VENDOR: Microsoft Corp.

APPROACH TAKEN: The company based its site on Microsoft's Windows NT and Site Server commerce engine.

SITE LAUNCH: November 1998

NUMBER OF PRODUCTS SITE SELLS: More than 3,000

TECHNOLOGY USED: Microsoft Site Server, Commerce Edition 3.0, Internet Information Server (IIS) 4.0 and SQL Server 7.0 running on Windows NT 4.0 on Compaq servers; F5 Network Inc.'s load balancers. Other applications include: Great Plains Software's accounting system and WebLine Communications Corp.'s customer interaction suite.

ADVANTAGES: "NT is less expensive [than Unix]. At the time, we were on a very tight budget to create the Web site, and we had the expertise with NT," says Viard.

"We also looked at the [Site Server commerce engine] software," he notes. "We knew we needed something that would afford a lot of personalization. . . . We wanted to design our own user interface and not be locked into templates," yet not reinvent the wheel for commerce functions such as calculating prices and taxes.

Microsoft "Active Server Pages (ASP) [which dynamically pull information out of databases for display in Web pages] are extremely easy to learn. We had developers whose skills were to create CD-ROMs, and we had Microsoft on the desktops, so they were very familiar with the Microsoft platform," Viard says. "Within weeks, [our developers] were up to speed doing ASP coding. This would not have happened had we used Unix."

SmarterKids.com develops and sells educational and entertainment products, including CD ROMs, books and games. Its Web site can recommend products based on information that parents enter about their children, such as age, educational goals and learning style. Fry Multimedia Inc. helped build the site, but SmarterKids.com staffers created the personalization components and recommendation engines.

DISADVANTAGES/TRADE-OFFS:

■ Microsoft's SQL Server 6.5 "cannot be load-balanced, so we were afraid that this was a very weak link," Viard says. In addition to closely monitoring the database, the firm upgraded to a clustered Microsoft SQL Server 7.0 environment to work around the issue. "If one goes down, the other will take over," he says. The company also is looking into partitioning the database into several components.

Microsoft response: While SQL Server can't be load-balanced across servers yet, both SQL Server 6.5 and SQL Server 7.0 can be set up in a fail-over environment to achieve high availability using clustering technology, according to a Microsoft official. SQL Server will gain some partitioning capabilities in upcoming releases, "but we anticipate that very few customers will actually need to take this approach, particularly in trade for the added complexity required to set up and manage," the official says.

■ Microsoft is oft critiqued about scalability — but not by Viard. He says his company uses 20 load-balanced, front-end Compaq servers and employs Akamai Technologies Inc.'s Internet content delivery service for its Web page graphics. "This removes the load from [our servers], which enables more throughput for taking orders," he says.

To further improve performance, SmarterKids.com set up a load-testing server. "All our programmers load-test their code," simulating several hundred users doing the exact same function, Viard says. "We may spend more time writing code, but we make sure it doesn't lock the database."

Microsoft response: Using the Microsoft platform, customers who properly design their applications with measurable performance objectives established up front "can achieve big wins with faster time to market and a decrease in overall [total cost of ownership] rather than pouring vast resources into million-dollar servers offered by other companies," a Microsoft spokesperson says.

■ "We hear a lot about Active Server Pages not being fast, and it's true," acknowledges Viard. "HTML code will load about 10 times faster for the exact same page. Of course, ASP gives you the dynamic environment that you couldn't do with HTML."

To speed the performance of ASP technology, SmarterKids created software that takes ASPs and converts them to HTML, which loads and displays more quickly on users' PCs. "We use ASP in our development process, but before we move the pages to the live Web server, we convert them to HTML. . . . So when the page goes to the site, it's HTML," says Viard.

Microsoft response: Microsoft encourages companies like SmarterKids.com to use caching to convert pages from ASP to HTML. Customers can choose a third-party caching solution, or they can optimize a utility in the IIS Resource Kit, said a Microsoft spokesperson.

BOTTOM LINE: "The Microsoft platform matches our development style," Viard says. "It's based on an established programming language, Visual Basic, and it allows for rapid deployment of new features. Microsoft also has a great track record of supporting products, and I trust they'll be around for a while."

RICHARD VIARD: Microsoft matched SmarterKids.com's style

Robert Chea

Vice president of engineering, Fogdog Inc., Redwood City, Calif.

APPROACH TAKEN: The sporting goods retailer integrated what it regarded as best-of-breed products with one another and with its own commerce engine.

SITE LAUNCH: 1998

NUMBER OF PRODUCTS SITE SELLS: 60,000 SKUs representing 600 brands.

TECHNOLOGY USED: Netscape's Enterprise Web Server Version 3.6.3, BEA Systems Inc.'s WebLogic 4.5.1 application server and various other software products, including a secure server, File Transfer Protocol server, load balancer and order-processing server, running on 17 Sun E250 boxes and one Sun E220R. An Oracle 8.1 database runs on two Sun E4500s, the second of which is in standby mode.

Other products include Kana Communications' customer service management system, Resonate Inc.'s Central Dispatch for load balancing and Network Appliance Inc.'s F760 for storage. Exodus Communications Inc. hosts the site.

RATIONALE: "For the most part, we picked vendors that were No. 1 in their category," Chea says. The exception was the storefront. Fogdog uses its own custom-coded storefront because it had built up a large code base over the years and didn't think a packaged application could reproduce its effort, Chea says.

The company stuck with Oracle for the database and Sun for hardware, in part because they're well supported by third-party software vendors, Chea says. Fogdog also chose Sun boxes because they're reliable, require little management and support the latest Java technology.

Chea says he chose Network Appliance storage because "they use [Network File System] mounting, as opposed to a direct SCSI connection to a storage array. We have single responsibility for different services, such as Web services. We can mount multiple servers in front of that repository with little effort. It lowers maintenance and work when we add a new Web server. If the database server crashed, all the data is sitting on the storage device, so we can bring up another server within minutes."

Fogdog switched from Apache to Netscape Web servers to get a well-documented and supported product. Although Fogdog didn't choose Netscape Web servers so it could stay with the Sun/Netscape alliance, Chea says he's happy the alliance took over the software maintenance "because I know over time, they're going to be able to improve the performance on it."

Fogdog opted for BEA's WebLogic application server last spring over the Netscape Application Server, Sun's NetDynamics product and the then-promised iPlanet Application Server, which has since been released. Chea says, at the time, he was concerned about how long Sun and Netscape might take to finish the iPlanet product, and he didn't want to choose a platform "and have it change substantially."

Sun/Netscape response: "For every Fogdog we lose, there are a number of high-traffic sites where reliability and scalability make the decision for iPlanet products," says a company spokeswoman, adding that every application server user must make changes to conform to the latest Java platform.

BOTTOM LINE: "My approach in looking at vendors includes three main criteria: the quality of their product offering, the quality of their support infrastructure and the timeliness of their product upgrades and integration with other vendors," Chea says. "Fogdog always needs access to the latest and greatest applications and features, and working with leading, best-of-class vendors has enabled us to get access to those apps and features first." ■

E-mail Service Puts Spam Back in the Can

Start-up Brightmail promises to kill junk e-mail before it wastes employees' time

BY AMY HELEN JOHNSON

GET YOUR Viagra here! Check out hot babes! Repair your credit! Get rich in no time!

Welcome to the world of spam. It's hardly the kind of e-mail that keeps the wheels of corporations running smoothly. Brightmail Inc. wants to trash it before it ever hits your company's e-mail gateway.

Brightmail Anti-Spam Service, aimed at Fortune 500 companies, provides dummy e-mail addresses that appear legitimate to spammers. Brightmail examines the e-mail received at these dummy addresses, hunting for potential spam. The San Francisco-based company runs an around-the-clock operations center staffed by people who read the suspect e-mail to determine its appropriateness. If it is spam, they send updated filtering rules to Brightmail software, which sits in front of the client's e-mail servers.

Bandwidth Advantage

Brightmail CEO Sunil Paul cites two major benefits to corporations that use his company's service: a reduction of spam's impact on corporate resources, such as bandwidth, server load and disk space, and a need for much less effort on the part of information technology departments compared with do-it-yourself, server-side solutions and desktop-filtering programs. Paul claims a current 80% interception rate, with continuing efforts to push that number up to 100%.

The company will go online soon with its first corporate customers. In the meantime, it's building a track record with the service through AT&T Corp. AT&T WorldNet personnel have been testing Brightmail since Oct. 1. The service provider went live with the antispam service on Feb. 1, offering it free to all of its e-mail customers. Edward Plaskon, product management director at WorldNet, says market research indicates that about 10% of the messages customers receive are spam.

The pilot program, which involved 45,000 individual users of WorldNet, reported that spam dropped by 60% with Brightmail in use.

Jonathan Penn, a senior industry analyst at Giga Information Group Inc. in Santa Clara, Calif., says Internet service providers like WorldNet, not corporations, are Brightmail's bigger market. Corporations want their service providers to handle spam, he says, before it even comes close to their e-mail gateways. And although Brightmail has signed up several large providers that offer filtering capabilities for their e-mail customers, no major corporation is on record as a customer a year after the product's launch.

However, Penn says Brightmail's service does a good job addressing spam.

"It has the right mixture of technology and human control," he says. "They've got a great solution that's really unparalleled in its capabilities and accuracy. But the market really hasn't determined that there's a pressing enough need to warrant this kind of solution."

Spam's Decline

Overall, Penn says, less attention will be paid to spam for two reasons: a general decrease in spam as companies wise up to permission-based marketing and the short-lived nature of corporate e-mail addresses (due to people changing jobs), giving spammers fewer legitimate mailboxes to target. If spam declines in volume and importance, then filters — which are becoming part of corporations' standard sets of security tools — may prove to be adequate, he says.

Paul disagrees, saying spam is only going to get worse. "Spam is a phenomenon that's driven by fairly small organizations or individuals who are spamming from their homes or businesses," he says. "Those people rely on ISP access. As ISP access gets distributed throughout the world, spam will rise."

Paul says the company's plans include opening the rules engine to customers so IT departments can set filters to catch e-mail that isn't strictly spam but is still unwanted, designing a similar service for small businesses and building an antivirus product.

He says he sees the latter as a natural extension of the company's current e-mail service because many viruses arrive embedded in e-mail. A server-based solution that stops viruses at the Internet gateway, as Brightmail does with spam, would give better protection than the currently popular solution of installing antispam software on individual desktops, he says. ▶

Johnson is a freelance writer in Seattle.

"WE WANT TO BUILD the most mission-critical set of e-mail services on the Internet," says Sunil Paul, Brightmail's CEO

Brightmail Inc.

Location: 301 Howard St., 18th Floor, San Francisco, Calif. 94105

Telephone: (415) 365-6133

Web: *www.brightmail.com*

Niche: Spam filtering service; people examine spam and set filters to block it.

Why it's worth watching: The service stops spam before it enters the corporate e-mail system.

Company officers:
- Sunil Paul, CEO and co-founder
- Tim Pozar, director of operations and co-founder
- Chris Madsen, director of business development and co-founder
- Jeremy Crandell, product manager and co-founder

Company goal: "We want to build the most mission-critical set of e-mail services on the Internet," says Paul.

Milestones:
- October 1997: Company founded
- January 1999: Company introduces antispam service

Employees: 70; expects an increase of 100% per year

Burn money: Total of $17.5 million from Accel Partners, Crosslink Capital Inc., Technology Crossover Ventures, Flatiron Partners, Sippl Macdonald Ventures and individuals

Customers: AT&T WorldNet, EarthLink Inc., Excite Inc., Juno Online Services Inc.

Partners: Netscape Communications Corp., Software.com Inc., Sendmail Inc.

Red flags for IT:
- Internet providers are starting to filter spam. When that happens, the corporate sector won't need to buy Brightmail's service.
- It's a service, not a product. If the company goes bust, you're left with nothing.

COMPUTERWORLD emerging companies

[the buzz
STATE OF THE MARKET]

Holding the Line On Junk E-mail

A common trick that spammers use is to make up e-mail addresses by linking domain names with possible user names, such as sue@earthlink.net or joe@timewarner.com. The spammer doesn't know if the account exists, but sending another message into cyberspace is such a small incremental cost that the gamble is worth it.

Because of these types of "auto-dialer" programs, Internet service providers get hit with many undeliverable messages. Edward Plaskon, product management director at AT&T WorldNet, says spam makes up s significant portion of WorldNet traffic. AT&T rejects millions of messages per day that are sent to nonexistent WorldNet addresses.

Corporations can do keyword filtering to block spam. With filtering, a rule checks messages as they arrive. The rule works by testing the sender or searching for keywords in the subject. But it's a crude solution, says Giga Information Group Inc. analyst Jonathan Penn, and often either lets through mail it shouldn't or deletes valuable items.

Programs like Mail Essentials (*www.gficomms.com*) have antispam capabilities as well. In addition to security features, this server-based program blocks messages based on the originating domain and checks for keywords that indicate potential spam.

As people have tried to police spamming on the Internet, a few Web sites have been created to educate people on effective antispam techniques.

Mail Abuse Prevention System LLC
www.mail-abuse.org
A set of tools for service providers to refuse e-mail from other providers suspected of harboring spammers and to prevent their servers from being hijacked by spammers.

Network Abuse Clearinghouse
www.abuse.net
Report abuse; find tools for uncovering the true origins of spam messages.

Responsible Net Commerce
www.spam.abuse.net
Offers tools to limit spam, policies to implement at your site and updates on antispam legislation.

Coalition Against Unsolicited Commercial E-mail
www.cauce.org
Lobbying organization working on legislation to stop and punish spammers, with affiliate groups in Europe and Australia. – *Amy Helen Johnson*

For more information on advertising,
call (800) 343-6474 Ext. 6000

The problem is, your timing's off.

Bad timing can throw a wrench into the workings of any company. In today's global e-business marketplace, time is money. Accurate, synchronized time for all your network components is essential for integrity and security. The answer? **TymServe™**, the proven, system-independent solution for accurate global time synchronization. Without it, you're simply out of time.

- Plug and play. Rack-mountable units install while your server is up and running – unlike others.
- Redundant sources. Use GPS (Global Positioning System), IRIG (Inter-Range Instrumentation Group) time code or dial-up for time sources.
- Low cost. Improved synchronization and unsurpassed reliability leave you free to focus on other issues.
- Secure source. NTP (Network Time Protocol) traffic stays inside the firewall – unlike other time solutions.

datum
eBusiness Solutions

>888 551-4022 >www.datum.com/tscw

For more information on advertising, call (800) 343-6474 Ext. 6000

HITACHI SOFTWARE
HP OPEN VIEW
TIBAL
SPECTRUM
ISS
Dialogic
NETIQ

AlarmPoint

Automated Notification & Response

When problems are detected, contact the proper people via
•Phone •Pager •E-mail

To obtain your free *AlarmPoint Eval CD*, call toll free (888) 221-0760 (option 1), visit our Website or e-mail us at sales@SinglepointSys.com.

NEW!!!
AlarmPoint Paging
If you need notification for paging and e-mail only, download our new AlarmPoint Paging from our Website: www.SinglepointSys.com.

Cyber-U.S. Inc.

Providers of custom software development, system integration, analysis and Y2K compliance for the PC, mid-range and large scale systems markets.

Four reasons to choose Cyber-US for your custom software development and programming needs:

- Expertise in a wide range of programming languages, operation systems and platforms

- Experience in a variety of industry segments and application fields such as transportation, banking, real estate, communications, geology, geographic information systems, and decision support

- High quality consulting services

- Very competitive rates

Call today for your FREE consultation. We will be happy to respond with our suggestions on how we might help your company with its Information Technology and programming needs.

Cyber-U.S., Inc.
703-299-0804
www.cyber-us.com

UPDATE WEB PAGES IN REAL TIME

BVJ Web View automatically puts your data base on the Internet or corporate intranet. HTML pages are dynamically created and updated, freeing up your valuable web developer's time. Allows your users to point-and-click to follow relationships between your data.

Logon to **www.bvj.com** for FREE demo
Call 978-458-4107 for FREE consultation

BE FINANCIALLY
INDEPENDENT

For more information on advertising,
call (800) 343-6474 Ext. 6000

BL Trading
authorized distributors of
Datasouth Heavy Duty Printers

featuring the:
Intelligent Desktop Thermal Printer

- Intelligent Stand Alone Capability
- FREE! Label Design Software
- 300 DPI Laser Quality Printer
- Rugged Metal Cabinet

Please contact Rob Littlefield for details and pricing:
robertl@bltrading.com www.bltrading.com,
voice: 781.982.9664 fax: 781.871.4456

A FREE Service for Computerworld Readers

"I really like **ePack**. It allows me to do "one stop shopping" on a variety of products, without having to search individually through all their sites."

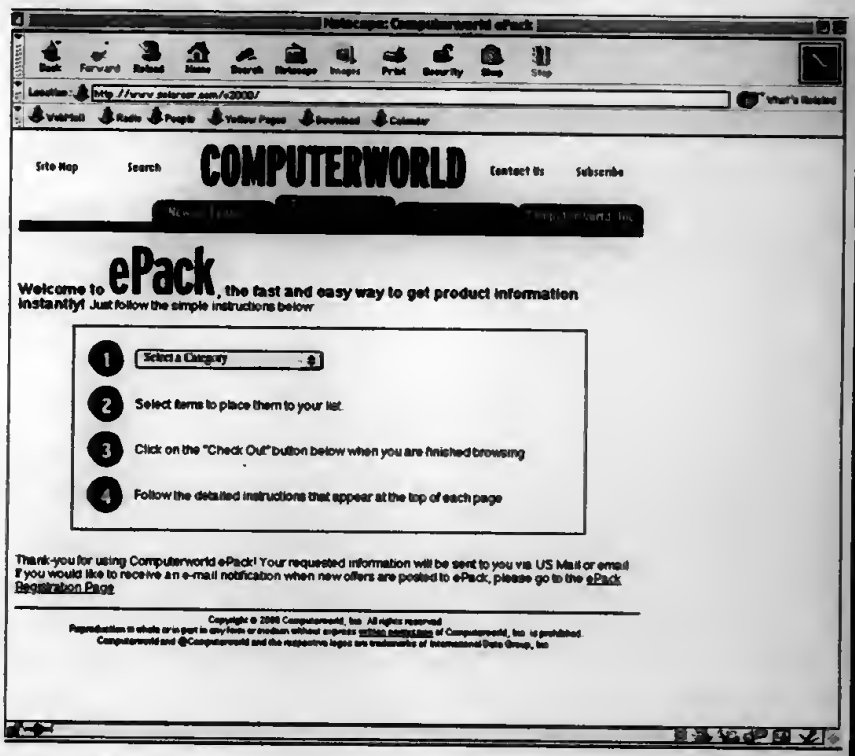
Anne Agnew,
Billing System Administrator,
Bio-Cypher/Unilab.

"It's an easy way to get monthly information on IT products and services."

Eleazar Briceno,
Direct Sales Manager,
Computer Associates

"Ingenious idea, you guys are amazingly efficient! Thanks for all you provide."

Dawn-April Williams,
Business and Project Manager,
Chopelas & Associates



ePack is the industry's first permission-based email resource of its kind fot infotmation on IT products and services. Each month, **ePack** will be emailed to you full of special offers from IT vendors of hardware, software, training, and networking products.

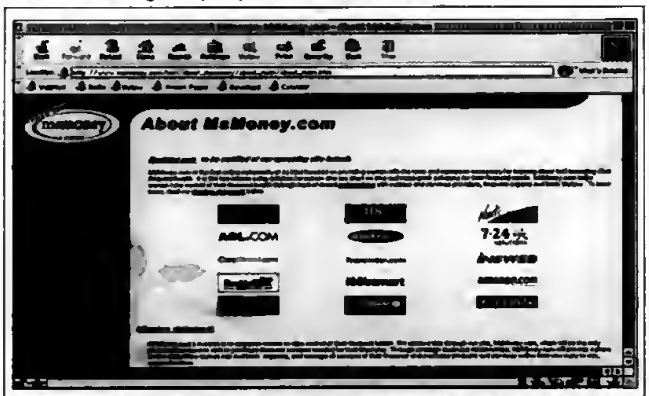
Check it out at **www.computerworld.com/epack**

If you are not currently receiving **ePack** via email, please register at **http://epack.computerworld.com.**

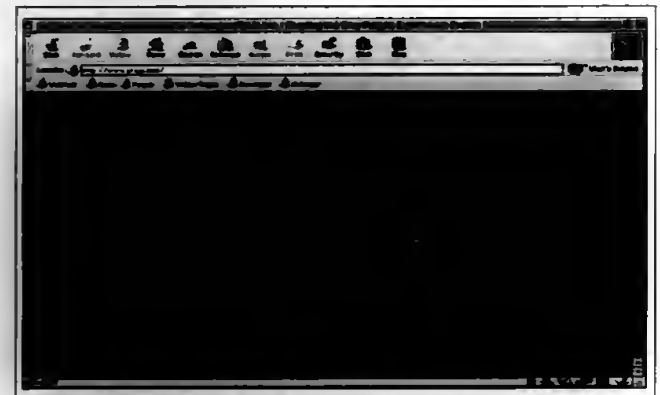
As seen at [redacted] www.demo.com

For more information on advertising, call (800) 343-6474 Ext. 6000

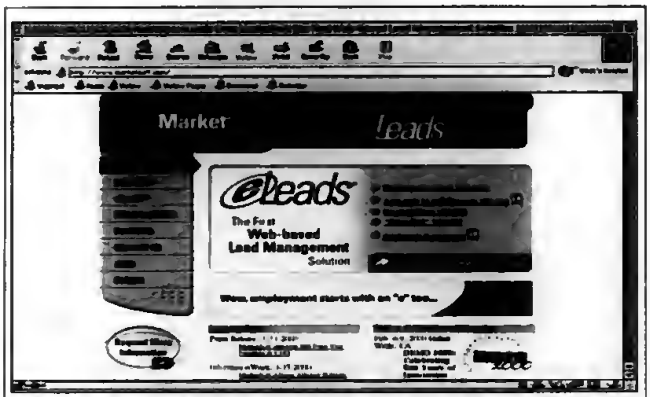
http://www.facetime.net FaceTime Communications is the leader in real-time, business communications on the Internet. FaceTime provides applications and a robust communications platform for e-businesses, enabling them to take advantage of the fast growing instant messaging communication channel. After all, every business needs a buddy! On the web at www.facetime.net



http://www.msmoney.com MsMoney.com is poised to become the premier financial website for women. We are dedicated to educating and empowering women to be financially healthy. Through best of breed partnerships, MsMoney.com is the "two minute a day" solution, offering a new depth of content and services missing today on the internet for this extremely important target group



http://www.praja.com Praja is dedicated to shaping the way people experience events. We offer a suite of event production and delivery platforms that enable businesses to create and manage comprehensive events on the web. With our Event Suite, customers can build and maintain event directories, while also developing rich, interactive live event experiences.



http://www.marketsoft.com MarketSoft Corporation's new business practice called The 1-to-1 Network is a collaborative, coordinated, and intelligent, technology-based methodology by which members of the extended enterprise can speak with one voice to the customer. The 1-to-1 Network ensures the best possible buying and selling environment within B2B and B2C agent-assisted segments, resulting in increased revenue from eBusiness and Web marketing initiatives.

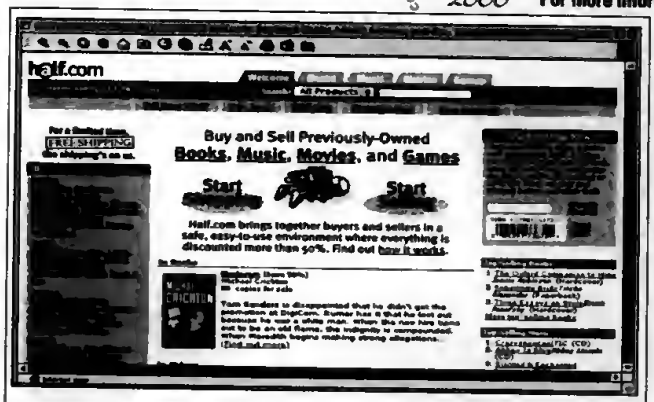
http://www.thinkfree.com ThinkFree.com offers pure web-based software solutions that enable true anytime, anywhere computing. Centrally hosted at its high-availability applications portal site, ThinkFree Office provides fast, Microsoft Office-compatible word processing, spreadsheet, presentation, e-mail and file management solutions for Windows, Macintosh, Unix, or Linux platforms that can be used offline with end-to-end security.

http://www.demo2000.com Over the past 10 years, Demo has propelled nearly 1000 products to market — products like the first multimedia PC, an intriguing little handheld device called Palm Pilot and a new programming language called Java. Demo has been a showcase for emerging technologies and a catalyst for numerous partnership deals, venture investments and mergers and acquisitions.

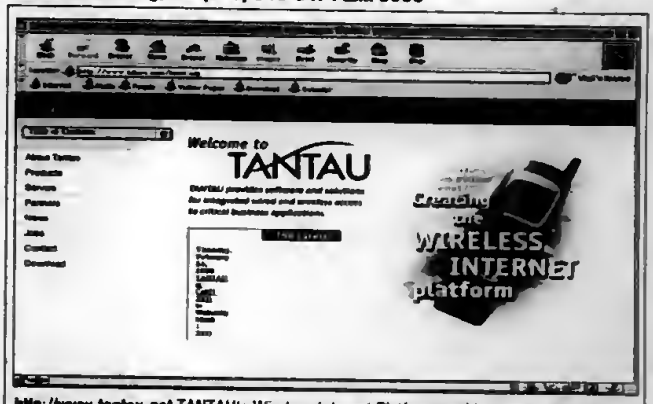
EMERGING TECHNOLOGIES SPOTLIGHT

As seen at COMPANY TO WATCH 2000 www.demo.com

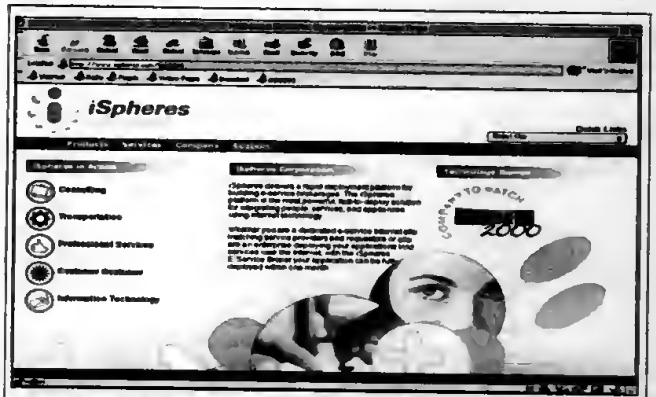
For more information on advertising, call (800) 343-6474 Ext. 6000



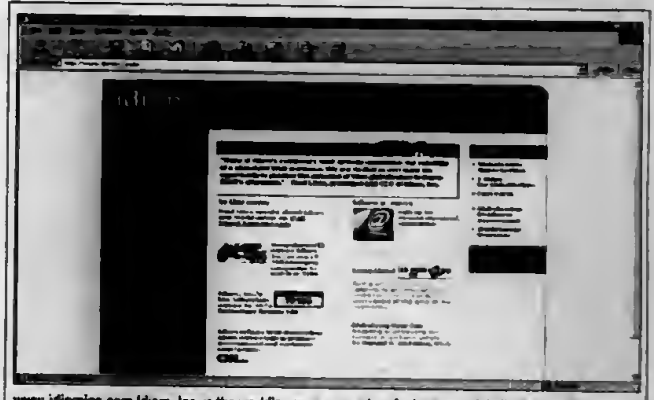
http://www.half.com Half.com is a new, innovative, online marketplace that connects buyers and sellers, like you, of previously owned books, music, games and movies. Everything at Half.com is always 50% off the list price or more. Buy now and take advantage of our limited time free shipping offer on all orders!



http://www.tantau.net TANTAU's Wireless Internet Platform enables companies to build, deploy and integrate applications for the wireless and wired Web. Customers include companies such as banks, brokerages and retailers, that must transact real business, in which money changes hands, anytime, anywhere. The product is architected at its core to offer mission critical scale, availability, transaction integrity and security.

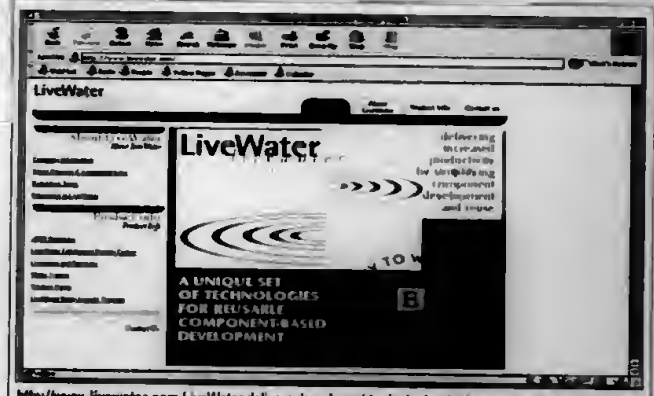


http://www.ispheres.com iSpheres Corporation delivers a rapid deployment platform for building e-service exchanges. These exchanges harness the power of the Internet to integrate people, services, and appliances. They also empower services to communicate and partner with one another to complete complex tasks.



www.idiominc.com Idiom, Inc. is the world's premier provider of e-business globalization solutions. Idiom's unique approach encompasses software, strategy, and services that enable enterprises to deploy a multilingual and multicultural Web presence, thereby increasing revenue, improving customer loyalty and reinforcing brand. Idiom was recently named one of Computerworld's "Top 100 Emerging Companies to watch in 2000." To find out more, visit our Web site or call us at (617) 456-3000

http://www.kachinanet.com KachinaNet.com develops intelligent Internet search technology that improves the use of Web sites as the primary means for an e-business to exchange information and conduct transactions with its customers. It's flagship product, KachinaGuide, is the first interactive guided search tool that enables online shoppers to conduct highly refined searches within a Web site.



http://www.livewater.com LiveWater delivers Java-based tools, technologies and adaptable eCommerce frameworks that fully leverage the J2EE platform and simplify development and reuse of standards-based Java eBusiness solutions. The LiveWater J2EE Solutions Suite is distinguished by its easy adaptability to unique and challenging eBusiness requirements and by the thoroughness of its J2EE implementation.

CRM

The cutting edge of servicing customers

While customer relationship management has existed as long as merchants have been doing business, technology is turning it into the driving force for marketing. This means a huge opportunity for IT pros who combine the right technology and business skills.

BY LESLIE GOFF

When a major airline announced two years ago that it would be departing American Express Co.'s Membership Rewards program, customer relationship management (CRM) technology flew to the rescue, recalls Dave Towers, who was the marketing manager for the program at the time.

The program awards customers points toward frequent-flier miles for the purchases they charge to their American Express cards. If the airline flew the coop, Amex feared its customers who used their points for travel on the airline would take off as well.

"It was a real challenge because the value proposition we were selling to those customers had the potential to disappear overnight," Towers says. "We had to take quick action to make sure the airline wouldn't leave and that customers wouldn't leave."

So Towers, who is now director of CRM at J. Crew Group Inc. in New York, piloted a multifaceted campaign using American Express' CRM systems to persuade the airline to remain in the program. From its databases, the company identified cardholders in each of the airline's hub cities, including frequent users of the airline. It extracted data revealing their overall spending

Career outlook and advice

So where can CRM take your information technology career and how can you get there? Here's some advice from the experts:

Robb Rasmussen, managing director of enterprise application services at Electronic Data Systems Corp. in Plano, Texas

■ **Career outlook:** "Because of the Internet, this is one of highest growth areas in IT. There's so much competition out there on a global scale for products and services, the big game now is being able to quickly get mind share with exactly what the buyer wants."

■ **Advice:** "Take some classes in the CRM modules of third-party applications like Oracle, SAP, PeopleSoft. Someone who has taken an SAP CRM certification class would definitely be ahead of other candidates. If you're an application developer, you need integration skills. I would focus on C++ and Java. While C++ is a language, it's really about connecting objects, and it gives you the dimension of how to integrate [different software]. Get to know enterprise application integration tools – technology that connects applications together."

Michael Manis, director of IT marketing products at Harrah's Entertainment Inc. in Memphis

■ **Career outlook:** "There isn't a technology that you could be in now that can't be taken into CRM. You just need to find the right application. The Internet and data warehousing are the hottest platforms. There's a whole [software] engineering career path with how customer-facing applications interface with warehouses. Application developers have a range of [paths] – if you know campaign-management tools, you can go into marketing, or if you can analyze customer data to find the 80-20 rule [80% of revenue comes from 20% of products], that can lead you to the business side. And if you can link how many people hit your Web site to overall customer behavior patterns, that's résumé power."

■ **Advice:** "Have you dealt with an application that enables a worker to answer questions when the customer is standing right in front of them? A purchase order system that can also answer any question that comes up? If you've been in the batch world all your life, you won't make it here. On the data warehouse side, have you worked on a customer-centric warehouse based on customer ID numbers? If it's based on product IDs, that's not customer-centric. And if you've been working on a Web site, is it personalized? Would I get a special offer that wasn't offered to anyone else? If the Web site is the same for every customer, you're not what I'm looking for."

Mike Levine, senior vice president of information technologies, national consumer services at The Chase Manhattan Bank in Garden City, N.Y.

■ **Career outlook:** "This is a burgeoning field. And if you're assembling customer-centric technologies, it positions you for marketing management, business analysis and senior business management and senior IT management. Early on, I was involved in linking customers to our data center on the wholesale side of our business; I was in IT, but I spent a lot of time in marketing and CRM, and that prepared me well for where I am now."

■ **Advice:** "Get some experience in marketing and statistical analysis to understand customer behavior patterns. On the technology side, get experience in databases, messaging systems and the Web. We look for people who have both specific software experience and a certain way of thinking, have good architectural backgrounds, are inventive and are good politicians, because you interface with lots of users who have different demands. It's a very unusual skill set."

Dave Towers, director of CRM at J. Crew Group Inc. in New York

■ **Career outlook:** "This is definitely a growing field, a constantly changing field and one where IT plays a critical role in moving forward. It's difficult to separate technology and customer relationship management, because it's all very intertwined. We live and die by our customer databases, and the ability to make that work for us is critical."

■ **Advice:** "You need to be comfortable doing hard-core programming one minute and going into a marketing meeting to discuss the content of your next outbound e-mail the next. You should have a strategic view of the business."

– Leslie Goff

---

patterns and air travel charges.

Then, via direct telephone surveys, Amex solicited customer reaction to the announcement and tracked it in a database. Coupling the feedback with the spending data, Amex was able to "prove the value of the partnership" to the airline, Towers says. "We showed them the benefits and convinced them to stay."

It's the kind of save-the-day use of CRM technology that careers are made of. Towers' combination of strategic business thinking and tactical technology know-how illustrates a new hybrid career path that's emerging as CRM systems become ever more critical to the way companies operate.

"CRM has been done since the beginning of time — it's the shopkeeper remembering your name and saying, 'Hey,' when you walk in," Towers says. "But technology opens it up. Given the complex world we live in, it has evolved to be the driving force behind how companies market goods and services."

Dual Background

Towers, 30, joined American Express in 1995 after earning an MBA from the University of Texas, where the business marketing curriculum fostered a Web-centric focus. His initial marketing experience as an ad copy tester in Los Angeles and his exposure to technology-driven marketing at college paved his way into Amex, where he acquired technology project management experience. J. Crew hired Towers in August, based on his dual background.

He works one-on-one with J. Crew's director of Web development, Sundar Rajan, to coordinate the CRM IT strategy, which is largely Web-based. Towers' role is managing the technology partners and ensuring that the CRM strategy and applications fit with J. Crew's overall branding effort, mesh with what the company is doing in its catalog and retail channels and work for the customer.

He must have a fundamental understanding of what the technology can do, how it works and how it can be leveraged to improve CRM.

His first project, for example, was selecting an e-mail management vendor to develop a platform to improve J. Crew's ability to respond to customers' e-mails.

Next, Towers worked with Rajan to coordinate migrating the Web site to a Java-based architecture. Now he's involved in a project using CRM technology to personalize the Web site. By developing applications that track a shopper's page views, actions and transactions during each visit to the site, jcrew.com aims to get the right chinos in front of the right customer at the right time.

Knowing Your Customers

"On the Web, we want to be at a point that we know our core customers well enough that if you are a sweater buyer, the next time you come to the site, your home page will feature a sweater," Towers explains. "Then maybe you go to the product-selling page to look at the sweater, but abandon it. Two weeks later, we could e-mail you: "Remember that sweater you looked at? Now it's 20% off."

His favorite part of the job, Towers says, is getting in touch with customers, understanding their point of view and using CRM technology to identify trends over a sample customer base. The most taxing part is dealing with external events beyond his control that have an impact on customers.

"When the business has a bad day, you have a bad day. You hear about it consistently," Towers says. "Being in CRM ... I am the voice of J. Crew. If something goes wrong, you have to step up and take the blame. The last thing a customer wants to hear is, 'It's out of my control.' My team represents the company, and we have to take responsibility." ◗

Goff is a freelance writer in New York.

Just the Facts

CRM is: Capturing and combining customer data to pinpoint the marketing of products and services; creating a seamless, consistent experience for customers at all points of contact; providing customers with what they want, when they want it; tailoring customer marketing for a one-on-one interaction; knowing your customer.

■ **Driving forces:** Globalization, Webification, the ever-growing need to increase sales while lowering costs by putting the right product in front of the right customer at the right time.

■ **IT positions involved:** Project managers; database architects, analysts and administrators; application developers.

■ **Types of IT projects:** Anything that touches the customer – including managing inbound and outbound call center applications and operations; generating customer profiles from information in myriad databases; devising and managing e-mail response systems; developing and integrating electronic-business applications; tying real-time inventory management to order-entry and fulfillment systems; creating data warehouses and data mining applications; coordinating customer marketing campaigns.

■ **Hot industries:** With CRM, it's easier to talk about industries where it's not hot. Basically, any company that sells products and services can, and should, use CRM technology. But in segments like aircraft manufacturing and aerospace, the circle of customers is so small that CRM isn't as critical as in, say, direct marketing, retailing or financial services.

■ **Skills/experience wanted:** A hybrid of technical, creative and marketing skills. Integration and customization of software is critical because CRM involves tying together an array of systems, including a number of prepackaged applications. Experience is required in C++ and Java as integration development tools; database architecture, management and development; data warehousing and data mining; project management; Web-related development; and ERP implementation.

■ **Key prepackaged software:** Siebel; Vantive (just acquired by PeopleSoft); Oracle CRM front-end package; Chordiant; SAP's related modules; Ariba; Commerce One; IBM MQ (message queuing) Series and MQ Workflow; Cognos Impromptu; Personify; and more.

■ **Personality needed:** The ability to think like a marketer and act like a technologist, and to interact with customers and co-workers across marketing and advertising, manufacturing, call center management, inventory and IT, without worry.

■ **Salaries:** Anywhere from $60,000 entry level to $150,000 for someone with three to five years of related experience.

COE MD9804279 Software Engineers needed to work extensively in analysis, design customization, implementation and training phases of Oracle Financials & Manufacturing package. Design and document enhancements for business users' improved work flow, assessing user needs and coordinating developers' work to achieve the best solutions in areas such as Order Entry, Account Receivables, Inventory, Purchasing, Bill of Materials, etc. using Oracle Tools such as Oracle Forms 4.5, Oracle Reports 2.5 and 3.0, SQL* forms 2.3, PL/SQL, SQL Plus, SQL Loader, Pro*C, SMARTDB, etc. Analyze the workload on DB Servers and study various Data Structures to identify Data to be purged or archived based on user requirements. Maintain enhancements or customizations of Oracle Application Packages and create test plans for business users. Fine tune the Oracle applications to improve performance and efficiency through code optimizations, enhanced algorithms. Other responsibilities include System integration, Open interfaces, AOL (Application Object Library), Object Maintenance and Migration, Technical Documentation of enhancements and customizations to ensure smooth migrations, and Data Maintenance. Sal @ $64K/yr OT @ $48/hr 40 hr/wk. 9-5 pm reqs BS in Elec Eng or as. field, 1 yr rel related experience in Oracle Financials & Manufacturing Package. Mail two copies of resume and copy of this ad to Department of Labor, Licensing and Regulation, 1100 North Eutaw Street, Room 201, Baltimore, Maryland 21201. Job Order No 8MM279. Job Location: Columbia, Maryland and multiple sites in the United States.

Computer

At Lucent Technologies we're defining the future of telecommunications. We're looking for individuals with a BS or MS and 1-2 years of directly related experience as an:

- Consultant
- Database Engineer
- Electrical Engineer
- Engineer
- Hardware Engineer
- IS Analyst
- IS Manager
- Network Analyst
- Phrase Development Analyst
- Process Engineer
- Product Engineer
- Product Market Engineer
- Product Validation Engineer
- Product Wireless Development
- Project Manager
- Program Manager
- Programmer
- Programmer Analyst
- RF Engineer
- Software Architect
- Software Developer
- Software Engineer
- Software Tester
- System Administrator & Integrator
- Systems Administrator

We work expertise in the following:

- C/C++/UNIX
- CDMA
- Fiber Optics
- GUI Design
- Internet/Network Protocols/Win/NT
- Object Oriented Methodologies/Smalltalk
- Oracle Development/ Applications
- Quality
- RDBMS
- SAP
- Software Tools
- Switching Technology
- TCP/IP
- VB
- Wireless Telecommunications

Please submit your resume on-line at: www.lucent.com/resume EOE

Seeking IT Professionals!

Pursue an exciting career with **Emerald Solutions Inc.** a dynamic NATIONAL consulting firm. We have offices in Birmingham, AL; Phoenix, AZ; Walnut Creek, CA; Greenwood Village, CO; Atlanta, GA; Edina, MN; Warren, NJ; Portland, OR; Dallas, TX; Vienna, VA; and Bellevue, WA.

Positions Available
Software Engineers
Programmer Analysts

Requirements: Bachelor's Degree in Computer Science or related field or equivalent.
Send resume, including location preference to:

Emerald Solutions, Inc.
Ref#CWAD02
111 SW 5th Ave., #2700
Portland, OR 97204
E-mail:
cwad02@emeraldsoltns.com

EOE

Software Engineer

Westford, MA. Interprets, develops, designs and tests applications solutions in the telephony communications industry for custom software applications projects with documentation. Develops and supports downloaded and upload 4GL programming, designs and develops GUI software in X Windows and MS Windows environment. Develops and integrates both high and low level software solutions with Unix system to achieve performance and application requirements. Works with Unix/Shell/C/PerlLuse/TCP/IP and MS Windows programming, project programming using Sybase or Oracle Database System design. Applies knowledge and skills in programming with large-scale relational databases, as well as data processing and applications programming in a client/server and internet environment. Req'd. Masters in Comp. Sci. or Physics or a related field or foreign equivalent. No experience necessary. 40hrs/wk. 8a-5p. $58,500/yr. Applicant should submit two (2) copies of his/her resume in response to: Case #19962917, P.O. Box 8968, Boston, MA 02114.

Software Engineer Duties: Analyze, design develop & modify computer system for assurance & merchandise mgmt. info using COBOL, CICS, DB2 in an IBM 3090 mainframe environ. Oversee the implementation of required enhancements. Coordinate encoding & perform system & software testing. Manage debugging procedures. Perform maint & provide support for system. Require: M.S. (or for equiv equiv.) in Comp. or Info. Sci. Eng. or a related field and 2 yrs. exp. in the job offered or 2 yrs exp as a Systems Analyst or Analyst/Programmer. Exp which may have been obtained concurrently, must incl. 2 yrs exp developing & modifying computer systems & 2 yrs. exp performing maint. & providing support for system. EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Salary $59,850/yr. Send resume (no calls) to: Danielle David, CTG, Inc., 7401 West 129th St., Suite 110, Overland Park, KS 66213-2634.

SOFTWARE ENGINEERS

needed to design and develop host database applications on Oracle 8, Windows NT / UNIX platforms using Java, PowerBuilder and Shell Scripts to provide quality assurance using automated test tools. Masters required in Math, Computers, Engineering or any other related field of study, plus one year of experience. Must have proof of legal authority to work in the U.S.

Salary, $66,000.00/year for a 40 hour work week.

Interested applicants submit resume to:
Jane Healey,
Ref #1240, DES 275 E. Main St., 2-W, Frankfort, KY 40621
Ad paid by An Equal Opportunity Employer

Instructional Designer Duties: Interpret training requirements & develop general detailed designs for self paced materials ranging from workbooks to multimedia CBT to electronic performance support. Determine course characteristics & general interface strategy incl. delivery platform, interface design, media selection & treatments, interactivity & navigation & user controls using Knowledge Producer. Resp. for determining course structure & sequence, learning objectives & developing measurement plans and learner profiles using Microsoft Word. Requires M.S. in Instruc. Systems, Comp. or Info. Systems or related field. Coursework must incl. classes in Instructional Systems, Performance Systems Analysis & Program Evaluation. EOE. 40 hrs/wk., 8:00 a.m. to 5:00 p.m. Salary $59,280/yr. Send resume (no calls) to: Steve Thornton, CTG Inc., 5295 Brook Hollow Pkwy., Suite 120, Norcross, GA, 30071-3619. Must have legal auth. to work in U.S.

Senior Software Engineer

(2 openings) Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have one year of experience using 1 of Group A and 1 of Group B and 1 of Group C OR 1 of A and 2 of B OR 1 of A and 2 of C as follows: Group A - Windows 3.1, Windows NT, Windows 95, Windows 98, Unix, HP-UX, IRIX, Sun OS. Group B - Visual C++, Visual C, C, C++, Visual Basic, PowerBuilder. Group C - JAVA, TCP/IP, HTML, MFC, COM, PERL, ASP, COM/DCOM, Active X, MTS. Master's degree in one of several broadly fields. Computer Sci./Apps., Eng., Chem., Math or Physics. Will accept Bachelors degree with five years of progressive experience as computer professional. Salary is $70,000 per/yr. 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Mr. Tom Rusnack, Manager Chartered Job Center, 10 Pakuso Dr., P.O. Box 210, Charleroi, PA 15022. Job Order No. 2030162.

Software Engineer

Design and develop object oriented technology Network relational and database management systems. Graphical User Interfaces. Work with object oriented languages such as C++, Java. Demonstrated ability working with SNMP (Simple Network Management Protocol) to develop network management systems. Demonstrated ability in design and development of application software using, C, C++ and Unix. One year experience designing and developing applications using Java. $72,480/yr 40 hr/wk 8 a.m. - 5 p.m. Must have 5 yrs. exp. (or 5 yrs exp in related occupation of Systems Analyst/Programmer) and B.S. Comp. Sci., Eng. rel field/equiv. Send 2 copies of resume. Job Order #2000-109. P.O. Box 999, Concord, NH 03302-0999.

Logica, Inc., is looking for entry-level and experienced candidates to fill the following positions, open at all of our US locations:

- **Software Engineers**
- **Systems Analysts**

Please forward your resume to: Human Resources Department at careers@logica.com OR www.logica.com

Software Engineer

Design and develop graphical UI/X applications. Design and develop UNIX GUI's and application code using C C++ and tools such as Xlib, Xt and Motif. Demonstrated ability to design, develop and enhance application classes to support graphics or database access class libraries using C++. Demonstrated ability with implementing 2D and 3D graphics primitives such as curves and splines (Bezier and B-spline), hidden line removal, mesh generation, clipping. $63,000/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs exp. and B.S. in Comp. Sci., eng. rel field/equiv. Send 2 resumes. Case #19983253 P.O. Box 8968, Boston, MA 02114.

Software Engineer

Duties: Resp. for the DB2 design & modification of systems applications in an IBM mainframe environ. Perform software develop. of system and network applications soft ware testing of modules & application documentation using COBOL. Perform troubleshooting & maint & provide support for computer system. Requires M.S. in Comp or Info Science Eng. or related field (will accept B.S. or foreign equiv. & 5 yrs progressive exp. in the computer ind.) & 3 yrs. exp. in the job offered or 3 yrs. exp. as a Sr. Programmer or Programmer/Analyst Exp. which may have been obtained concurrently must incl. 3 yrs exp performing troubleshooting & maint. of computer system & 3 yrs. exp using DB2 & COBOL. EOE. 40 hrs/wk. 8:00 a.m. to 5:00 p.m. Salary $65,000/yr. Send resume (no calls) to: Mel Richter, CTG, Inc., 2851 Charlevoix Dr. SE, Suite 300, Grand Rapids, MI 49546-7048.

Computer Systems Analyst Duties: Develop & maintain transportation mgmt system using ActiveX control/COM object tech & object-oriented programming using Visual Basic. Design relational database using SQL Server implementing normalization rules. Perform develop. of Windows NT configurations, system implementation & testing. Resp. for troubleshooting & system admin. Implement new designs, write code, analyze & solve system problems. Requires M.S. in Comp or Info. Science or related field. M.S. coursework must incl. classes in Computer Operating Systems, Systems Analysis & Design & Object Oriented Programming. EOE. 40 hrs./wk., 8:00 a.m. to 5:00 p.m. Salary $56,700/yr. Send resume (no calls) to: Tim Weis, CTG, Inc., 6000 Lombardo Center, Suite 140, Seven Hills, OH 44131-2579.

Software Engineer

Analyze, design and develop commercial software applications for 16-bit or 32-bit Windows environments. Design and code Windows based GUI's and application code using tools such as VC++, VB, MFC SDK. Design and implement backend database support using databases such as MS Access, SQL server. Demonstrated ability in advanced windows development using custom controls, graphics, printing and multithreading. Demonstrated ability of design and development of OLE servers and containers. $57,000/yr. 40 hr/wk. 8 a.m. - 5 p.m. Must have 2 yrs exp. and B.S. in Comp. Sci., eng. rel field/equiv. Send 2 resumes. Case #19983254 P.O. Box 8968, Boston, MA 02114.

Programmer/Analyst

to analyze, design, develop, code, test, modify and configure DAP (Documentation Automation Platform) programs using C++ for PC/LAN clients and ILE C/400 for AS/400 clients. Use C programming language to modify DAP rules and write DAP rules script language. Analyze files downloaded from AS400 database. Require: M.S. degree in Computer Science or a closely related field. Must have a demonstrated ability to perform the stated duties gained through previous work experience / academic coursework and projects. Extensive travel on assignment to various company and client sites within the U.S. is required. Salary $53,195/yr. M-F, 8:30 a.m. or 5:15 p.m. Send resume to: Elizabeth Haney, Asst. V.P., P.M.S.C. Center (Int. Of 1-77 & US 21N), Blythewood, SC 29016. Attn: Job XL.

PROGRAMMER/ANALYST to analyze, design, develop, test, implement, maintain and support GUI based application software and databases for business and management applications in a client/server environment using object-oriented programming. Visual Basic, C, C++, Visual Java, Omnimark, Rogue Wave, Sybase, Access, and MS SQL under Windows 95/NT and UNIX platforms. Evaluate program needs of user and consult with users to identify operating procedures in program objectives. Require: B.S. in Computer Science, Engineering discipline or a closely related field, with two years of experience in the job offered or as a Programmer. Extensive travel on assignment to various client sites within the U.S. is required. Salary: $65,000 per year, 8 am to 5 pm, M-F. Send resume to: Irfan Qazi, President, IFFI Enterprises Inc., 7502 South 91st East Avenue, Tulsa, OK 74133, Attn: Job MP.

Software Engineer I

Responsible for software development including software design, coding, testing and documenting for web logging instrumentation and data interpretation projects. Perform numerical modeling and 3D graphics programming, cross platform development, and scientific programming in Unix and Windows using Fortran, C and C++. 40hrs/wk. M.S. in Computer Science, Mathematics or Electrical Engineering. 2 yrs. exp in the job offered or 2 yrs. related exp. in scientific programming, including numerical analysis and mathematical modeling. $66,979/yr. Apply at the Texas Workforce Commission, Houston, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701 JO #TX0815742. Ad Paid by An Equal Opportunity Employer.

SOFTWARE ENGINEERS

needed for applications programming and systems design for the IBM Mainframe using data and process modeling techniques. Master's required in Math, Computers, Engineering or any related curriculum, plus 3 yrs. experience in any occupation performing the job duties described above. Employer will accept Bachelors plus 5 yrs. experience in place of the Masters and 3 above mentioned. Must have legal authority to work in the U.S.

Salary: $75,000/yr. for a 40 hour work week.

Interested applicants submit two (2) resumes to Job Order #19983420, P.O. Box 8968, Boston, MA 02114. Ad paid by an Equal Opportunity Employer.

Software Engineer

(multiple openings) Design, develop and implement software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Two years of experience in job offered or as a computer professional including two years of experience with Oracle RDBMS, Unix, PI/SQL, and Pro*C. Work requires travel, relocation and work involves some evening hours. Bachelors degree or foreign equivalent in one of several limited fields: Computer Sci/Apps., Math, Chem., Physics or Eng. Salary $65,000 per/yr. full-time. Please submit resumes to: Pittsburgh East Job Center, Mr. James Woods, Acting Mgr., 6206 Broad St., Pgh., PA 15206. Reference: Job Order No. 2030164.

Software Engineer

Design and develop graphical UNIX applications. Design and develop UNIX, GUI's and application code using C, C++ and tools such as Xlib, Xt and Motif. Demonstrated ability to design, develop and enhance application classes to support graphics or database access class libraries using C++. Demonstrated ability with implementing 2D and 3D graphics primitives such as curves and splines (Bezier and B-spline), hidden line removal, mesh generation, clipping. $66,000/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs exp. and B.S. in Comp. Sci., eng. rel field/equiv. Send 2 resumes. Case # 19983255 P.O. Box 8968, Boston, MA 02114.

Powerhouse Program/ Analyst

w/min. 2 yrs. PH exp. To design, prog. & test custom mods. To our SW app. Must have extensive exp. with PH QUICK, QUIZ, and QTP. Ability to work w/min. sup. & interface closely w/customers. Bachelor's. deg. in Comp. Sci. or equiv. work exp. Salary $67k. Send 2 copies of resume to: Job Order #2000-116, PO Box 989, Concord, NH 03302-0989.

First American is seeking Software Engineer. Duties include research, design, and development of computer software systems, programming, and program testing. Send resume to Human Resources Manager - Technology, 8435 N. Stemmons Freeway, Dallas, TX 75247. EOE.

Software Engineer

Design and develop multi-tier business applications to Web-enable legacy system. Demonstrated ability to develop applications using Java. Demonstrated ability to design interfaces in C++ to access backend systems. Knowledge in writing programs to access legacy system. $60,000/yr. 40 hr/wk. 8 a.m. - 5 p.m. Must have 2 yrs. exp. (or 2 yrs exp in related occupation of Programmer Analyst/Systems Analyst) and B.S. in Comp. Sci., eng. rel field/equiv. Send 2 resumes: Case#19983358, P.O. Box 8968, Boston, MA 02114.

Dallas based IT Co has multiple openings for Programmer/Analysts and Software Engineers. Please send a resume, with salary history & requirements to: Information Knowledge Group, Inc., Attn: Human Resources, 17440 N. Dallas Parkway, Suite 262, Dallas, TX 75287.

Operations Research Analyst

Suburban healthcare facility mgmt firm has immediate opening for newly created operations research analyst position. MS deg. or Industrial Engineering or equiv. Req. Designing/developing mathematical decision support models to manage our various client healthcare facilities. Systems and web based programming related to management of healthcare facilities. Competitive salary and excellent benefit package. Send resume to: Advanced Technologies Group Inc., 2607 W. 22nd St. Ste 47, Oak Brook, IL 60523.

MILLIONS OF READERS

MILLIONS OF SURFERS

ONLY THOUSANDS OF DOLLARS

TOTAL IMPACT TOTAL SAVINGS

Put your message in ITcareers and ITcareers.com and reach the world's best IT talent.

ITCAREERS
where the best get better
1-800-762-2977
ITcareers.com

careers.com careers careers careers.com

Senior Programming Analyst/Senior Member of Technical Staff who will be responsible for taking a staff role in Electronic Product Development Group projects, including assisting with the research planning, designing and analysis of software projects, performing coding and development testing documentation and maintenance of the system using object oriented analyses and design paradigm. C, C++ and Visual Basic, assuming the role of technical team leader in researching the target application requirements, including planning and designing application structure and analyzing the pros and cons of each consideration. Develops programming solutions for assigned projects according to specification; testing programming solutions developed by team members and self; creates program annotations, technical specifications, help text, user documentation and artifacts using Rational Rose; updates, maintain, and enhance products and documentation and assist external and internal customers with regard to product functionality. Participate in managerial decision making regarding selection of the team members. Delegates project assignments to junior programmers. Work closely with the business units in determining the product design. Responsible for the development and demonstration of prototypes. Perform problem solving or client sites; forecast and other estimations regarding team size, development time involved in the product's full life cycle from conceptualization, design, development/implementation, quality assurance, customer support. Must have a Master's degree in Computer Science. Six months experience required as a Senior Programming Analyst/Senior Member of Technical Staff or 48 months experience as an Applications Software Programmer. Experience must have included software development using object oriented analyses and design paradigm, creating and maintaining project artifacts using software engineering tools such as Rational Rose, software development using a "full life cycle" approach (product conceptualization, design, development, and quality assurance); software programming using C, C++ and Visual Basic. 40 hours per week, 9:00 a.m. to 5:00 p.m. $46,376.72 per year. Must have proof of legal authority to work in the United States. Send copy of resume to Iowa Workforce Center, 800 Seventh Street, Cedar Rapids, Iowa 52406-0729. Please refer to job order IA1100991. Employer Paid Advertisement.

Proficient Business Systems, Inc. is a fast growing IT services firm with Fortune 500 clients. We are currently looking for IT professionals to serve as programmer analysts and software engineers with experience in one or more of the following areas:

- **IBM Programming / DBA:** COBOL, DB2, IMS, CICS, FOCUS, VSAM, JCL, MVS
- **Client Server programming / DBA:** C, C++, VC++, PowerBuilder, E-Commerce, JAVA, Visual Basic, HTML, Active X, Oracle, SQL Server Informix, Sybase Developer 2000, Perl
- **ERP/ERM:** Oracle, Seibel, Vantive, Clarify, BAAN, SAP Peoplesoft, JDE
- **System/Network Admin:** HP-UX, AIX, UNIX, Linux, Windows NT, Solaris, CISCO Routers, Novell Networks
- **Software Engineering:** TCP/IP, UNIX, Socket programming. Entry and senior level consulting positions are available. A Bachelor's / Masters degree plus relevant professional experience may be required for most positions.

If you have expertise in any of these areas and you are ready for an exciting and fulfilling career then send your resume by fax to **(847) 247 8471 or by email to resume@prsbys.com**

INFORMATION SYSTEMS ANALYST/DEPARTMENT HEAD. Perform detailed business analyses to design, implement and maintain relational food-manufacturing database system. Modify, customize, and upgrade existing database systems including SBT Series 7.x, SBT Professional Series 3.x database system in both MS DOS and MS Windows environment to re-engineer inventory control, material management, financial analyses, and accounting practices. Design and program database applications and front-end interfaces for all departments in the company by using MS FoxPro Visual Basic, MS Access, SQL, and CA-Clipper. Administer and maintain company's LAN network based on Novell operating system under IPX/SPX, TCP/IP protocols, Ethernet topology and SNMP management including system configuration upgrade/optimization, database tuning and data resource security. Design and implement system disaster recovery plans, system backup and restore by using fault-tolerance and ArcServe 6.x technology. Provide proactive maintenance day-to-day and user technical support for computer hardware, software and network related problems. Responsible for information system communication support, Internet access and E-mail. 40 hrs/wk, M-S, in Computer Engineering or Computer Science, 2 yrs. exp. in job offered or 2 yrs. related exp. as Software Engineer or Programmer Analyst working with accounting software using C. $65,979/yr. Apply at the Texas Workforce Commission, Houston, Texas or send resume to the Texas Workforce Commission (TWC), Reed, Room 424T, Austin, Texas 78701. JO #TX0982504. Ad paid by An Equal Opportunity Employer.

SOFTWARE ENGINEER to design, develop, implement, maintain and support n-tier and 2-tier front end programs, database procedures, and web enabled queries for credit card industry applications using Oracle, SQL, PL/SQL, and Delphi. Write Oracle PL/SQL queries and tune queries for maximum performance. Code database descriptions and specify indentifiers of database management systems. Create tables and indexing schemes. Test and correct errors, and refine changes of database. Select and enter codes of utility program to monitor database performance. Create and publish database standards. Train users. Require M.S. degree (or equivalent) in Computer Science, an Engineering discipline or a closely related field. Must have a demonstrated ability to perform stated duties gained through previous work experience/academic coursework and projects. A B.S. degree with an additional five years of progressively responsible experience in the field will be considered the equivalent of a M.S. degree. Salary $75,000 per year. 8:00 am to 5:00 pm, M-F. Send resume to: Stacy Flueck, HR Specialist, Nova Information Systems, Inc. One Concourse Parkway, Suite 300, Atlanta, GA 30328. Attn: Job MK

Systems Consultant

Provide services to clients in design, development & support of business systems & applications; design & develop applications & modules for financial, manufacturing, telecommunications & human resource activities, using Windows SDK, Oracle, Oracle*Case, Oracle*Forms, ReportWriter, PowerBuilder, SQL*Server, SQL*Net & Unix; reengineer modules & generate reports with Crystal Reports & EiWin; test & modify systems; install & implement new packages & convert systems & data from old client environment to Oracle & Unix environment; provide systems security & technical support to users. $59,529.60/yr, 40 hrs/wk, M-F, 8 am-5pm. Bachelor or Eng. or B.S. in Computer Sc., or Computer Eng., or Electrical Eng. & 2 yrs. exp. in job offered or 2 yrs. related exp. as Systems Analyst, or Programmer Analyst. B.S. may be foreign equivalent degree. Must have proof of legal authority to work permanently in the U.S. Position located in Naperville, IL. Send 2 copies of resume & cover letter to: IL Dept. of Employment Security, 401 S. State St., 7 North, Chicago, IL 60605. ATTN: Leonard Sulisz. Ref. #V-IL 22085-B. An Employer Paid Ad. No calls.

Senior Software Engineer. Design and develop traditional two-tier client/server applications to a single business function, process, or service using MS SQL Server/Sybase as a platform. Analyze and model business, industry and application specific processes and requirements using domain knowledge. Design, develop, implement and test Windows GUIs and application code using VB, PowerBuilder. Work with database back-end access and development using ODBC, triggers and stored procedures with database systems such as MS SQL Server, Sybase. Work on Object Cycle, PVCS, and Case Tools such as Power Designer. Demonstrated ability designing and developing reports using report writers such as Crystal reports, Report Smith, Envision, SQR, Informaker or other commercial report writers. Demonstrated ability using MS SQL Server, Sybase on Windows, UNIX platforms such as HP, IBM RS 6000. $70,000/yr, 40 hr/wk, 9 a.m. - 5 p.m. Must have 5 yrs. exp. (or 5 yrs exp in related occupation of Systems Analyst/Systems Developer) and B.S. in Comp. Sc., eng. rel. field/equiv. Send 2 resumes: Case #19983345, PO Box 8968, Boston, MA 02114.

Programmer Analyst

Design, develop and test computer software for business or scientific applications. Analyze software requirements to determine feasibility of design and design software system testing procedures. Interface with relational and object oriented databases the Oracle and Versant. Use distributed computing technologies the Component Object Request Broker Architecture (CORBA) and Component Object Model (COM). Use web-based technologies such as Common Gateway Interface (CGI), server side plug-ins and JAVA servlets for e-commerce applications. Develop software for various platforms (Windows 95/NT and UNIX) using expertise in C++, JAWA, Visual C++, and GUI development for Windows 95/NT and expertise in software configuration process using source code control software. Requires a Bachelor of Science degree in Engineering or Computer Science and two years experience in job offered or two years related programming experience. 40 hour work week. $65,562 per year. Submit resume to the Pennsylvania Job Center or Mr. James J. Maskin, Manager, Beaver Falls Job Center, 2103 North Avenue, Beaver Falls, Pennsylvania 15010. Job Order #9105987. Ad paid by an Equal Opportunity Employer.

IT careers.com

where the best get better

1-800-762-2977

LOCAL PARTNERSHIPS

Experience. Power. Diversity. The strength of a full-service, global IT consulting firm. The convenience of multiple locations to pinpoint both our customers' and consultants' needs. We are Complete Business Solutions, Inc. (CBSI), providing superior business strategies across all industries and throughout the country.

Denver, CO • Los Angeles, CA • Milpitas, CA
Phoenix, AZ • Portland, OR
Sacramento, CA • Seattle, WA

Since 1978, CBSI has focused on supplying state-of-the-art client/server and Internet systems, comprehensive facilities and enterprise network management and structured software engineering. Recognized by Business Week as one of the top 100 growth companies of 1998, our competitive advantage is the result of an incredible team of resources and networked approach.

Over 500 companies nationwide rely on us for expert IT assistance. And it's people like you that will set us apart from the competition. Find out more about CBSI today!

We are currently seeking technical professionals with experience in the following skill sets:

E-Commerce Architects
Data Warehouse Architects
Visual Basic, C++ and Java Developers
Manufacturing Process Sr. Managers, Managers & Analysts

In addition to cutting edge opportunities, we offer a full range of excellent benefits, including:

- Premium Paid Health and Dental Plan
- Disability Insurance
- Flexible Spending Account
- Retirement Plan, including a 401(k) Profit Sharing Plan
- Education Assistance and Project-Related Training
- Paid Time Off and Holiday Leave

Empower your career by joining a market leader with amazing growth potential...CBSI. In addition to cutting edge opportunities, we offer a full range of excellent benefits. Please forward your resume to: **CBSI, Attn: Theresa Osburne, 1600 NW Compton Drive, Suite 210, Beaverton, OR 97006 or fax us: (503) 748-8001. E-mail: tosburne@cbsinc.com**

CBSI
Complete Business Solutions, Inc.

WWW.CBSINC.COM

CBSI is proud to be an Equal Opportunity Employer

COMMD9884227 – Senior Software Engineers needed to work extensively in analysis, design, customization, implementation and training phases of Oracle Financials & Manufacturing package and manage others doing the same. Design and document enhancements for business uses. Improve work flow assessing user needs and coordinating developers' work to achieve the best solutions in areas such as Order Entry, Account Receivables, Inventory, Purchasing, Bill of Materials etc. using Oracle Tools such as Oracle Forms 4.5, Oracle Reports 2.5 and 2.0, SQL* forms 2.3, PL/SQL, SQL* Plus, SQL* Loader, Pro*C, SMARTDB, etc. Analyze the workload on DB Servers and study various Data Structures to identify Data to be purged or archived based on user requirements. Monitor enhancements or customizations of Oracle Application Packages and create test plans for business users. Fine tune the Oracle applications to improve performance and efficiency though code optimizations, enhance algorithms. Other responsibilities include System Integration, Open Interfaces, AOL (Application Object Library) Object Maintenance and Migration, Technical Documentation of enhancements and customizations to ensure smooth migrations, and Code Maintenance. Sal @ $77K/yr, O/T @ $38.50/hr, 40 hrs/wk; 9-5 p.m., reqs MS in Comp. Sci. or rel. field and 1yr of experience in Oracle Financials and Manufacturing Package. Mail two copies of resume and copy of this ad to Department of Labor, Licensing and Regulation, 1100 North Eutaw Street, Room 201, Baltimore, Maryland 21201. Job Order No. 9884227. Job Location: Columbia, Maryland and multiple sites in the United States.

Software Engineer and Senior Software Engineer Positions to design, develop and implement software systems or determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have and year of experience in job offered or as a computer professional as well as and year of skills in field. Bachelors or Masters degree in one of several limited fields. Computer Science/Apps. Engineering, Chemistry, Math, Physics, or scientific or business related field. Will accept Bachelors degree with five of progressive experience. Salary: $65,000 to $105,000 per yr. 40 hrs/wk, 9:00-5:00 p.m. Please submit resumes to: Mr. Anthony Gabicki, Manager, Westmoreland County Careerlink, 300 E. Hills Street, Youngwood, PA 15697-1698. Job Order No. 7056808

RDBMS: DB2, Informix, Oracle, FoxPro, MVS, Novell, UNIX, VAX/VMS, Windows, APT, Crystal Reports, C, C++, COBOL

Oracle RDBMS: Designer 2000, Developer 2000, Oracle RDBMS, Oracle Applications, SQL*Plus, Pro*C, PL/SQL, SQL*Forms, SQL*Reports

GUI and Internet Applications: Windows 95, Windows NT, Visual C, Visual C++, C, C++, Visual Basic, PowerBuilder, TCP/IP, HTML, MFC, CGI, MTS

Mainframe: IBM3090, IBM ES/900, MVS, IMS, CL/400, CICS, TSO, VSAM, COBOL, JCL, AS/400

PeopleSoft, SAP or Baan

Senior Forecasting Specialist (2 positions). Develop project plans and time lines, and coordinate and negotiate project plans with other team members. As team leader, ensure that projects are complete, accurate and on time. Provide direction and technical help to junior team members. Prepare, develop and report forecast analyses for senior management. Develop accurate forecasts that allow operations to develop manpower requirements for short-term operating requirements, as well as annual and long-range planning. Analyze operating statistics and components of the operations using statistical and modeling techniques. Develop predictive models in SAS for operational volumes for all areas of customer service including freight, track customer support and international operation requirements. Develop advanced flexible computerized forecasting systems using SAS. Develop ad-hoc to forecasts via online databases and reporting systems. Define data requirements and create databases using ACCESS to support analyses and forecasting purposes. Requirements: Master's or foreign degree equivalent in statistics, math, economics, operations research or related field plus 2 years of experience in offered position or in forecasting, business analysis and/or operations research using advanced computer modeling techniques OR bachelor's or foreign degree equivalent in statistics, math, economics, operations research or related field plus 5 years of progressive experience in offered position or in forecasting, business analysis and/or operations research using advanced computer modeling techniques. Stated experience must have included at least 1 year with SAS and 1 year with ACCESS or similar database software. Salary range: $46,061-71,560/yr, 40 hrs/wk, M-F, 8:00 a.m. to 5:00 p.m. Position located in Memphis, TN. Job order #TN6201215. Send resumes to: Barbara Galloway, TN Department of Labor, Allen Employment Center, Unit 560, James Robertson Parkway, 11th Floor, Nashville, TN 37245-1200.

Software Engineer

Develops, implements and optimizes the high speed floating point DSP (digital signal processing) algorithms for the DAQ (data acquisition) subsystem of the company's proprietary medical image diagnostic equipment, such as Cardiac MRI (magnetic resonance imaging). Develops real-time firmware including diagnostics and application code for the embedded micro-controller/microprocessor used in the data acquisition sub system. Conducts problem troubleshooting analyses and SPR resolution and performance enhancements for the products. Interacts with cross-functional development teams, including both Hardware and Software Engineers to define, develop and evaluate new applications. Drives Six Sigma quality initiatives and activities in MR software engineering development, assists in introducing innovative changes, and improves the software engineering process to minimize the software development cycle. Required is a Master of Science degree in Electrical Engineering and one (1) year of experience in the position being offered or one (1) year of experience in the related occupation of Graduate Research Assistant. As part of the required experience in the position being offered or in the related occupation, the applicant must have had experience in real-time embedded system or digital signal processing application design and programming, had experience with C/C++ and assembly language programming for Unix workstations, and had experience with digital and analog circuits design. Monday through Friday, 8:30 AM to 5:30 PM, 40 hours per week, $59,102.18 annually. Qualified applicants can submit two (2) copies of resume and cover letter to: Mike Brooks, File #C101279, DWE-ALC, PO Box 7972, Madison, Wisconsin 53707-7972. Reference File #C101279.

IT Careers in E-Business/E-Commerce

Out of the way Y2K, E-Business is 2000's Front Burner

While the last three years have found information technology pros scrambling to prevent any Y2K bugaboos, the year 2000 is all about e-business – from managing customer relationships, to money and stock transactions, to improving internal networks with employees. The opportunities abound, from architecture to database analysis and management.

by Carole Hedden

Ernst & Young Applications Services

Chicago, IL

A wholly owned subsidiary of Ernst & Young LLP, Ernst & Young Applications Services (EYAS) helps clients who have huge backlogs of changes and modifications to existing systems, requiring the development, integration and support of systems applications. "We help our clients re-platform into newer technology," explains Bruce Shoger, chief operating officer for the unit. "We are gearing up for e-commerce improvements, web page construction and JAVA tools – anything that enables our clients to mine the data in existing systems or databases without completely replacing them."

The company has added more than 100 JAVA developers in the past three months and can see maintaining this type of hiring level throughout 2000. "There are two categories of people we need," says Shoger. "We need specific skill sets and experience in open systems, object-oriented, maybe some C++ or JAVA. But we also need entry-level people who may not have the experience, but who do have computer science or technical degrees that provide the fundamentals of analysis through development."

The Ernst & Young Applications Services unit operates somewhat differently from the major consulting firms. "Our philosophy is that you should be able to live and work in the same city. We're building centers in major metro areas as our client demand grows," says Shoger.

To assist in developing skills, EYAS is establishing centers of expertise. "These are built around technical and thought leaders who will develop folks who work for EYAS," says Shoger. "It's the job of these centers to push beyond the work to what will be needed in the future. It's the core of our professional development program. We won't have to wait until a new technology becomes generally accepted in the marketplace, because our people will be ready before that point."

Shoger says EYAS can offer the best of both worlds. "We are a place where advanced thinking and training are under way, and you'll get a minimum of 80 hours of training every year. Our clients are those that set the standards in their industry. And, here, every year is a new year."

Information Control Corporation

Columbus, OH

Information Control Corporation started out as a value-added reseller just over 20 years ago. Today, however, the company is a noted player in the field of full systems consulting in emerging technologies. With just over 200 employees, the company offers the speed and flexibility for employees to build their capabilities and take on the most intriguing of projects.

ICC operates in three categories. Professional Services is the consulting arm, where applications

are developed and supplied to customers. Technical Services designs, supports and operates networks for ICC's customers. The third area, Project Services, is an outsourcing service that delivers turn-key solutions to customers.

"We plan to hire about 100 people in the coming year," says ICC CEO John Kratz. "Ideally, we're looking for someone with development experience, who has worked on complex projects using JAVA, C++, Visual Basic and relational database development. There are plenty of people with the right buzz words on their resume, but we are looking for those who have applied the knowledge in complex projects."

The company offers opportunities to those with the ability to lead and transfer knowledge and also to those interested in providing support to teams and customers.

Training and development are critical to this small firm. "We customize the training and development to the individual, to build technical and project skills, but also in the areas of analysis and communication," Kratz adds. "There is no defined career path in a firm like ours. Our philosophy is geared to the individual – not a repetitive track, but rather geared to you. That's the biggest advantage to working at ICC.

"This is a great place to build your career. You'll be exposed to diverse, high visibility projects," says Kratz. "These are projects that are critical to our customers' ability to move forward so it's a results-oriented environment."

Lucent Technologies

Murray Hill, NJ

When Lucent Technologies became an independent company, separated from AT&T, four years ago, it became the breeding ground for new technologies and ideas. Manned by Nobel Prize winners and the top thinkers in the technology world, Lucent today is helping businesses adapt and change to the e-business environment. "We manufacture and deliver a wide range of industry-leading communications equipment, networks and software that enable e-business," explains Sandi Clarey, Lucent recruiting manager. "They range from high-capacity optical networking systems for communications service providers, to communications switches for small businesses.

"We also offer Customer Relationship Management (CRM) solutions, which provide businesses with systems and software that help build and maintain long-term relationships with customers."

One of the hot project areas for Lucent this year is customer relationship management tools. "The secret to business is developing and maintaining long-term relationships," she says. "Companies need a strong system to sustain top of the line growth. People expect better service than ever, and they are tough customers. Companies need tools to help them handle their millions of customer contacts."

Lucent is also involved in multi-media, computer telephony, workflow, predictive tools and interactive voice systems. "It's a very volatile business where we have new developments on a regular basis," says Clarey. "To develop these kinds of tools, we need people with experience in the field. We do some college recruiting, but we're looking for people who have developed or implemented systems for call centers, with project management skills and the engineering know-how.

"Just as important as these technical skills, we need people who have a 'fire' inside them to eat up the competition," adds Clarey.

Lucent focuses on each employee being in charge of his or her career, supported by an extensive team of mentors and education offerings. "We offer opportunities in 90 different countries, so this is a company that has learned about being global and operating in a diverse environment," says Clarey.

NOVO

San Francisco, CA

Building an e-business system is one thing. At NOVO, the goal is to evolve an e-business entity, from strategy and planning to how the e-business looks and responds to customers. A privately held firm, NOVO has U.S. offices in San Francisco, New York, Los Angeles and Detroit. Clients range from Continental Airlines and General Motors to Ernst & Young and Levi-Strauss & Co.

NOVO offers clients a collaboration of disciplines – business planning, engineering, creative and marketing, as well as e-business implementation. NOVO's Rapid Customer Value Deployment methodology creates, measures and develops end-user value.

"We believe that real market evolution will be dictated not by companies, but by consumers," explains NOVO's CEO Kelly Rodrigues. "This dynamic requires that traditional agencies partner much closer with the product development teams than they have in the past. We can't approach the Internet as simply a new sales channel, but as an interactive services medium that demands the collaboration of technology, business strategy and marketing.

"NOVO is looking to hire individuals with strength and knowledge in their particular discipline and that are interested in sharing their knowledge in a learning-focused environment," adds Rodrigues. "We want people who are looking to have a great time while they create excellent work for our clients and who understand the awesome implications of helping to build the digital world."

Origin Technology in Business

Dallas, TX

Origin Technology in Business expects to grow 10 fold in the next three years. The firm is part of Origin, a global company serving the e-business

market from its base in the Netherlands. The parent company operates in 32 countries, providing ERP and technology integration, support and development, desktop systems and networking, database management, mainframe and mid frame architectures. With $2 billion in revenues, the company continues to grow, with e-business at the forefront of that growth.

"We've seen a lot of activity surrounding customer relationship management and supply chain management," says Matt Semrad, director of e-business solutions in North America. "But the most immediate opportunity is surrounding employee-oriented applications to improve how organizations perform. We'll be customizing the enterprise portal for employees – to address areas ranging from procurement to human resources, to time/expense to managing corporate knowledge in core business processes like research and development."

The company is looking for individuals with business consultancy skills. "That's where this business starts," says Ann Wurster, vice president of professional services. "We need people who know business, know customers and know the manufacturing environment. The technical skills range from architecture to web-based transaction to distributive computing."

Origin prides itself on its global presence. "You'll be working with some of the top 100 companies in the world," says Wurster. "Yet with that worldwide scope, there's an entrepreneurial approach. While we expect fast growth here in the United States, we're also seeing strong growth in the United Kingdom, the Netherlands, Germany and France."

"We're looking to grow at a fast rate in multiple markets so those coming to work at Origin will see opportunity and exposure in technical and business development," adds Semrad. "The hottest areas in the states are Dallas, the Midwest and the East Coast." Origin has development centers in Cincinnati and Washington, D.C.

PaineWebber

New York City

When PaineWebber launched its online customer presence three years ago, the route of e-business was still being defined. Today, the firm is moving ahead aggressively to provide clients with extensive online access to research and other account-related information, to enhance relationships between financial advisors and clients.

Natalie Leone, corporate vice president for staffing, says the firm will be taking on new projects during the coming year. One such project is to continue to build and enhance PaineWebber's online services. T+1 is another major effort.

"Currently stock exchange trades are settled within three days. We'll be moving to an immediate system, one in which processing will occur in real time to permit trades to settle the next day," says Leone.

To address existing and new projects, Leone is looking for individuals with experience in multi-platforms, web, mainframe and client/server environments, telecommunications, system architecture and database management and modeling. The company offers extensive career and professional development opportunities, including on-site degree programs through Rutgers University and Stevens Institute of Technology. "The marketplace is very competitive," Leone admits. "We've launched an employee referral program named E-VOLUTION to attract the talent we need. The idea is to encourage employees to refer others to the company, because that's where we have the greatest recruiting success."

Individuals will be hired to work on team projects, primarily in the Manhattan or Weehawken, NJ, offices. "We plan to hire approximately 550-700 people in the IT area in the coming year," adds Leone. Currently, the IT group includes approximately 1,900 people.

"PaineWebber is a large firm with an entrepreneurial feel," Leone explains. "We put significant resources into employee training and development and encourage employees to work toward achieving career goals and personal life balance, through programs such as telecommuting and flex time."

SkillsVillage.com

Santa Clara, CA

SkillsVillage.com views itself as *the* community of IT experts, serving as an online trading community that matches hiring managers with IT contractors and staffing companies. It's an e-business serving the e-business world.

"We are not a job board," explains Chris Wong, president and CEO. "It's a more complete service of staffing procurement for corporate clients." Independent contractors use the exchange to bid on projects or to expose themselves to project opportunities. "When we first started the company, one thing that was clear was that we wanted to serve both the independent contractor and the hiring manager," says Wong. "We wanted to make the process more efficient."

To serve both client and contractor, SkillsVillage.com has developed a number of tools, including time entry, job evaluation, time approval and others. Key to the system is the digital portfolio, which updates contractor skills electronically and in real time. "As information feeds in, in terms of the projects a contractor has worked on and evaluations they receive, these become part of the contractor's portfolio – which gives the hiring manager a better view of the actual experience and capability of a contractor," says Wong. The portfolio replaces the resume.

"You need to have a resume because it's the only common denominator between candidates looking to be placed on projects," he says. "There are inefficiencies inherent with a resume – it's written by me for me. What we found is that our clients need more details about job history – what projects people work on, the depth of the project, more authenticated data. That's what the digital portfolio provides."

Wong sees the advantages to the contractor as simple. "You probably hate updating your resume yet it's your primary marketing platform. Our system does it for you. You also get a whole set of tools to run your business, for free. Our focus is on finding you jobs and giving you the tools to manage your own business. We plan to continuously expand the footprint for this operation."

SkillsVillage.com currently has 8,000 independent contractors in its database, with 5,000 in the backlog. "The key isn't registration for our business," says Wong. "The key to our success is whether you have a digital portfolio which gives corporate buyers the ability to explore and find the right people to meet their requirements."

e-lite companies

e-merging companies

e-ssential companies

e-normous opportunities

IT careers.com

where the best get better
1-800-762-2977

Global Software Solutions, Inc is seeking a Software Engineer who will: (1) design, develop, analyze and debug C, C++, JAVA modules in AIX, Solaris for FVT component tester in ODE build environment; (2) develop and debug Unix SHELL scripts, MAKE files and porting C++ code across different platforms for cross platform functionality; (3) design and development of GUI and develop service objects for employee information system in the environment of Visual C++, Oracle Windows NT and ODBC. Require M.S. in Comp. Sci. or Comp. Application, and min. 1 yr exp. or (B.S. with 5 yrs. exp.) $65,500/yr. 40 hrs/wk, Mon-Fri, 8:00 am-5:00 pm. Resume to Mr. Kamalakar Jasti, President, Global Software Solutions, Inc. 1135 Rue La Chelle Lane, Creve Coeur, MO 63141. Employer paid. AD/EOE.

Softwr Engr Dsgn devlp internal telephony applic'n w/Trunking Utilizat'n Analysis (TUA) Queuing theory comput'g algorithm & stat'cs model Dsgn voice/fax broadcast fax blend'g/message delivery w/C++ client/server & K-shell netwk program'g on Unix Devlp Web Oracle DB w/Oracle DBMS PL/SQL CGI Java Applet JDBC & JavaScript Dynamic HTML Research new integrat'n way of cross-platform fax/voice service devlpm't Maintain sys & provide tech support on daily voice/fax applic'n 40 hrs $61,513/yr B-S MS in Math/Comp Sc. 1 yr in any posit'n w/Oracle DBMS & TUA Resume to J. Gaston Dev Wrkfrc Devlpm't 4040 Seven Hills Dr. #186 Florissant MO 63033 Re: Job#209093

Programmer/Analyst:
Design, develop, test and implement Client Server Applications. Install administer and maintain LANs using Windows NT, Novell Unix and OS/2 servers. Install maintain tune and support Oracle and Informix databases. Requires experience in PeopleSoft, Visual Basic, Power Builder, Oracle, Informix, SQL, PL/SQL, SQR. Experience in Windows NT, Novell, OS/2 and Unix, strong knowledge in Java, HTML and Lotus Notes. 40hrs/wk, M-F 9-5. Resume to: Human Resources, Hyranks Inc, 1931 N Meacham Rd, Suite 380, Schaumburg, IL 60173

Sales Professionals and Growth-Oriented Firms
Enterprising sales professionals and business services firms wanted. Sell image management, software/services to graphic arts and corporate communications operations in major corporations. Strong new software already adopted by several prestigious firms. Top commissions and alliance arrangements for right parties. Send resume and letters of interest to: Manzanita Alliances, Inc. 200 WestLake Park Blvd., Ste. 262, Houston, TX 77079 or e-mail to: archardm@bp.com

Senior Systems Analyst
Wanted by Information Technology Firm in Independence, OH. Must have BS in Computer Science or equivalent & 3 yrs exp. Computer software exp should include formulation/ design customizing Oracle applications and SAP, and performance tuning of databases. Respond to: ClevelandHR, Widepoint Corp., 4401 Rockside, Independence, OH 44131

Open your mind to a career with unlimited possibilities.

- Web Developer
- Web Designer
- Senior Project Manager - E Commerce
- Oracle DBA Developer
- Data Architect
- Programmer Analyst - C, C++, Unix

K ba
Scranton PA 185 05 2
kanbay a exus on Please re
code CWDCH020 n al r sponder

Kanbay
www.kanbay.com

Database Services Team Leader
McHugh Software International Inc, provider of logistics solutions, located in Milwaukee, WI seeks qualified applicant to be responsible for management coordination direction & completion of timely and high-quality delivery of database services for internal & external customers, including project/implementation teams, product teams & corporate staff and management of day-to-day accomplishments of all database services staff. Requires Bachelors-Comp Sc/MIS/Eng or technically related field with 5 yrs. exp database administration using Oracle, Informix, SQL Server, Sybase, Rdb or DB2 & 2 yrs. exp UNIX or Windows NT. Interested candidates should send resume & cover letter with salary requirements to: McHugh Software International Inc, Attn: Human Resources Dept. (W 56), 20700 Swenson Drive, Suite 400, Waukesha, WI 53186, Fax: 262.317.2638, Email: Recruiter@mchugh.com. No phone calls or third party inquiries. An equal opportunity employer.

Programmer Analyst Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test and document computer programs. Evaluate user requests and business requirements for new and modified programs. Liase with business and data processing management to formulate and define system scope and objectives through research and fact-finding to develop and modify information systems. Installation of computer systems and networks. Use of UNIX, ORACLE, COBOL, SQL, SQL PL/SQL, PRO*C, Powerbuilder and Peoplesoft. Reqs. Bachelors in Computer Science, Computer Engineering, Mathematics, Electric or Electronic Eng. or its foreign equivalent. Plus 2 years in the job offered or 2 years as a Programmer, Consultant and/or Programmer Analyst. $50,000/year, 40/hrs/wk, 9 AM - 5PM.
Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732, 7040. Refer to Job Order No. IA 1101016

Senior Software Engineer
Analyze production requirements. Design, implement, test and integrate software modules. Evaluate and recommend third party software products to integrate with CNT products. Positions require a Bachelor's degree in Electrical Engineering, Computer Science or relevant field, 4-6 years experience in software development, and prior experience with C, C++ or Java, and Unix and Windows development environments.

Please send your resume and cover letter to: Computer Network Technology, Attn: HR-TP, 6000 Nathan Lane, Plymouth, MN 55442, Fax: (612) 550-8812, E-mail: recruiter@cnt.com. Equal Opportunity Employer.

www.cnt.com

CNT
Computer Network Technology

You Might Have Heard Several Interesting Rumors About Us.

We're Proud to Say, They're All True.

100 BEST PLACES TO WORK IN IT 1999

#1 Place to Work for IT in Chicagoland – ComputerWorld

100 BEST COMPANIES FOR WORKING MOTHERS

Among the 100 Best Companies for Working Mothers – Working Mother

1999

Among the Top 500 Technology Innovators in the Nation – InfoWeek 500

A lot of people have been talking about the exciting things that are happening at Household. But we'd like to tell you firsthand. As a leader in the financial services industry, our commitment to excellence and innovation is propelling us to new heights. We've created a state-of-the-art workplace and dynamic opportunities for personal and professional growth. People are definitely taking notice of us. It's time that you...

SENIOR BUSINESS ANALYST

We are seeking an individual with 5+ years MIS programming experience in Telecom & Electronic Retail to the software life cycle process including analysis, design, coding and testing on an AS/400. Additionally, this position will assist in the development, design and implementation of business systems, and will work with user groups to determine system needs. Ability to work independently in a fast-paced environment and strong communication skills are required. Master's degree in computer science preferred.

INFORMATION ANALYST

The selected candidate will be responsible for developing, running and testing of statistical applications. This includes developing team with design/development of models used in business studies to answer strategic business questions. Also involves working with Data warehousing, OLAP technologies, Data Warehousing and OLAP web development tools to develop OLAP applications. Qualified candidate will have experience implementing web based mission critical enterprise reporting applications using object oriented technology. Knowledge of MS OLAP/SQL server 7.0, experience required, along with a Bachelor's degree and ability to manage multiple projects.

Excellent Compensation Package. For immediate consideration, e-mail your resume to: jobseeker@household.com or send to: HOUSEHOLD, Attn: IS Dept., 6801E Convoy Court, San Diego, CA 92111. Fax: (858) 569-2240. We are an equal opportunity employer.

Household

www.household.com

EOE

ENGINEERING

MOVING FORWARD

BREAKTHROUGH

Make yours with Cirrus.

From data storage to networking to audio, we've been making the breakthroughs that have made us one of the most successful, dynamic companies in the semiconductor industry. Today, we're building on our success and creating new promising career growth opportunities. And you can be a part of it. Make your breakthrough with Cirrus Logic.

Cirrus Logic, Inc. currently has the following openings:

- Website Developer Job code: #50004227
- Engineering Technician Job Code: #50004195
- Sr. Device Physics Engineer Job code: #50003749
- Design Engineer Job code: #50003732
- Sr. Design Engineer/Digital
- Sr. Test Engineers (Both Digital & Mixed Signal)
- Staff Test Engineer/Mixed Signal Job code: #50003733
- Sr. CAD Engineer Job code: #50003666
- Staff CAD Engineer Job code: #50003667
- Sr. (Spice) Modeling Engineer Job code: #5003748
- Manager, Design Engineering Job code: #50003630
- Applications Engineer
- Firmware Engineers

For immediate consideration, please forward your resume, **indicating Job Title and Job Code**, to: Cirrus Logic, Inc., 3100 West Warren Ave., Fremont, CA 94538, Fax: (510) 624-7140, E-mail: staffing@corp.cirrus.com EOE.

Visit www.cirrus.com

CIRRUS LOGIC®

PROGRAMMER/ANALYST
DATABASE ANALYST

Offshore Digital Services seeking candidates with commercial experience in the areas listed below:

• programmer/analysts and application programmers with 2-7 years commercial experience. Candidate should have a BS (or foreign equivalent) in Computer Science or a related field

• database analysts and developers with minimum 3 years commercial experience. Candidate should have an MS (or foreign equivalent) in Computer Science or a related field

Full time permanent positions are available in the San Francisco Bay area, and nationwide

Operating System - Unix, MS Windows NT/95, OS/2 **RDBMS** - Sybase, Oracle, MS SQL Server, Informix **Front-end tools** - Visual Basic, PowerBuilder, Developer 2000, Designer 2000 **Applications** - ERP, Inventory, Purchasing, Distribution **Internet Programming Tools** - Web Servers, ASP, Java **Languages** - C, C++, Perl

Offshore Digital Services provides competitive salaries, benefits, and a bonus program designed to encourage long-term employment and increased customer revenue. Interested? Send a detailed resume with cover applied for education background, project experience, and geographic preferences to:

The Personnel Manager Offshore Digital Services, Inc.
14758 Wicks Boulevard San Leandro, CA 94577
Fax: 510-483-1819 Email: personnel@odsi.com

DIGITAL

Programmer Analyst – Bibliographic Database – Working with Sales & marketing on managing workflow in light of priorities. Assigning tasks to team members & communicating progress to manager. Consulting with team members about projects assigned. Taking a leadership role in developing process & tools that will improve the quality & increase the efficiency of developing bibliographic databases. Designing & developing new bibliographic databases. Provide programmers with specifications or how to program new databases. Maintain a set of current bibliographic databases. Act as a technical contact person for providers of the databases. Tracking the progress of each database project with internal tracking system. Preparing performance reviews of team members. Hiring of team members. To perform this job successfully, an individuals must be able to perform each essential duty satisfactorily. The requirements listed below are representative of the knowledge, skill and/or ability required. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions. Minimum requirements: Masters Degree in Library and Information Science. 1yr experience in Database searching or 1yr experience Computer experience with DOS, Windows, MAC and/or UNIX operating systems. Knowledge of local & wide area networking technologies including but not limited to the internet. Experience with bibliographic database products. Job in Utah 40hrs/wk 9:30am – 5:30pm $55,640/yr. Resumes required. Mail resume to: DEPARTMENT OF WORKFORCE SERVICES Attn: Pat Redington Job Order #3060902 140 East 300 South – 1st Floor SLC UT 84111

Programmer Analyst sought by company in Farmington Hills, MI that develops software & provides professional services to work in Colorado springs, CO. Design & develop computer software applications that access ORACLE relational database management systems & incorporate client/server architecture using PowerBuilder. Analyze user requirements. Code, test, debug, & performance tune the applications or interfaces. Use Java, HTML & web development tools in the design & development process. Requires Bachelor's or foreign equivalent in comp. sci., eng., or related field (incl. mech. eng.), 1 yr. exp. in software application development where the applications & interfaces access ORACLE relational databases using PowerBuilder. 8am-5pm, M-F. $65,000/yr. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order Number CO4648930.

SharinSoft Inc., a national computer consulting company, is looking for qualified applicants to join a growing company in such fields as web related programming, QA and administration, E-Commerce and networking technologies. Positions are based in our Fremont, California office but will require travel throughout the country. Qualified applicants must have a bachelor's degree plus two years relevant experience for the following positions.

Computer Programmers
For UNIX and Windows NT systems, a combination of C++, Visual Basic, ASP, Java, CGI, PERL, SQL, QA tools and other programs.

Database and Systems Administrators
For UNIX and Windows NT systems, a combination of Oracle, Informix, DB2, Sybase, and MS SQL Server database administration, Shell Scripting, System Administration and programming.

Positions offer competitive salaries and benefits packages.
For consideration, submit resumes to: Shakisoft Inc.
ATTN: RECRUITMENT 43216 Christy Street, Fremont, CA 94538
EOE

Sr. Software Engineer sought by computer software consulting company in Greenwood Village, CO to work in Denver & other unanticipated job sites in the U.S. to: a) a senior level engineer in full life-cycle design & development of computer software applications & modules that incorporate client/server architecture & run on a UNIX OR Windows NT platform, using C & C++ programming languages. Analyze the needs & goals of each project, create appropriate designs for software applications, & create design documentation. Code, test & debug all applications & modules. Provide mentoring & guidance to other software engineers. Requires Master's degree or equivalent in Computer Science or related field (including Physics). Specifically, the position requires a Master's or foreign degree equivalent, plus 3 yrs. progressive UNIX software development experience; or a Bachelor's, or foreign degree equivalent plus 5 yrs. progressive UNIX software development experience. Working knowledge of programming languages C & C++, UNIX operating systems, & client/server architecture. $70,000/yr. M-F, 8am-5pm. (3 openings.) Respond by resume to James Shimada, CO Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 & refer to Job Order No. CO 4649054.

IT careers.com

Senior Programmer/Analyst sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US. As a senior level, design & develop distribution & inventory software applications &/or software tools that run on IBM AS/400 platform &/or incorporate client/server architecture & interface with a variety of relational database management systems. Analyze requirements. Create designs & design documentation. Code, test, & de-bug the software applications. Use programming language RPG in the design & development process. Provide technical assistance to Programmer/Analysts. Requires Master's in computer science, engineering or related field (incl. chemical engineering), working knowledge of designing & developing distribution & inventory software applications on the AS/400 platform using programming language RPG. 8am-5pm, M-F, $60,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4648941.

Senior Consultant sought by company in Denver, CO specializing in business software solutions to work in Denver & other unanticipated job sites in the US in a senior capacity: provide consulting services in the area of energy-related enterprise resource planning software applications. Engage in post sales implementation of energy-related enterprise resource planning software applications, including installing, implementing, & supporting the software applications. Enhance & modify applications to meet the needs of specific clients. Act as liaison to large corporate clients who are using energy-related software applications, including managing on-going implementation projects for these clients. Provide expertise to development teams, regarding energy-related enterprise resource planning software applications. Requires Bachelor's or foreign equivalent in computer science or related field (incl. architectural engineering). 2 years experience implementing, enhancing, & modifying energy-related enterprise resource planning software applications. 8am-5pm, M-F, $84,000/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer Job Order #CO4648940.

Programmer Analyst

Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Under direct supervision, analyze, plan, develop, test, and document computer programs including network communication programs. Evaluate user requests and software program requirements for new and modified programs. Write specifications, code, test, and debug computer programs. Customize hardware and software to client needs. Use of Windows NT Server 4.0, Novell, UNIX, SCO, MS IIS 3.0, dBase and Paradox. Reqs. Bachelor's or its foreign equivalent in Computer Science, Computer Engineering, Electrical or Electronics Eng., Mechanical Engineering, Physics or Mathematics. Plus 1years in the job offered or 1 years in a related occupation such as Systems Analyst, Technology Manager or Software Engineer. $45,000/ year 40/hrs/wk, 8AM-5PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver CO 80202 and refer to Job Order No. CO 4648181.

ELECTRICAL ENGINEER

for computer hardware products company to design logic/analog circuits using CAD. Respond to MS. Barbee Antaras Microsystems, 1624 Dell Ave., Campbell, CA 95008.

Programmer Analyst. Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test and document computer programs. Evaluate user requests and business requirements for new and modified programs. Write specifications, code, test, debug computer programs. Installation of computer systems, networks and customizing hardware and software to client needs. Use of ORACLE, UNIX, PRO*C, Developer 2000, and IBM RS/6000. Reqs. Bachelors or its foreign equivalent in Computer Sci, Computer Eng, Electrical or Electronic Eng., or Mathematics. Plus 2 year in the job offered or 2 year in a related occupation such as Computer Engineer, Systems Officer and/or Systems Analyst, Information Systems, Electric or Electronic Eng. or Mathematics. Related experience must include installation, testing and customizing of hardware and software and software to client needs. $75,000/year, 40/hrs/wk, 8:30AM-5:00PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4648577.

Programmer Analyst

Sought by Englewood Colorado consulting company to work in various unanticipated locations throughout the U.S. To work in various unanticipated locations throughout the U.S. Under direct supervision, analyze, plan, develop, test and document computer programs. Evaluate user requests and software program requirements for new and modified programs. Create functional and technical specifications. Develop testing procedures for new product development and maintenance. Customize hardware and software to client needs. Use of FOXPRO, C, Novell Network. Reqs. Bachelor's or its foreign equivalent in Computer Science, Electrical or Electronics Eng., Computer Engineering or Statistics. Plus 1years in the job offered or 1 years in a related occupation such as Systems Analyst. $40,000/year, 40/hrs/wk, 8AM-5PM. Respond by resume to James Shimada, Colorado Department of Labor & Employment, Tower II, #400, 1515 Arapahoe St., Denver, CO 80202 and refer to Job Order No. CO 4648185.

Programmer/Analyst sought by company in Denver, Co specializing in business software solutions. Design, develop, & localize client/server enterprise resource planning software applications or software tools that are platform independent. Analyze requirements. Create designs & design documentation. Code, test, & debug the software applications. Use proprietary case tools & programming language C in the localization &/or development process. Requires Bachelor's or foreign equivalent in computer science or related field; 2 years experience localizing enterprise resource planning software applications. 8am-5pm, M-F, $50,600/yr. (2 openings.) Respond by resume to James Shimada, Colorado Department of Labor & Employment, Employment & Training Division, Tower II, #400, 1515 Arapahoe, Denver, CO 80202, & refer to Job Order #CO4648634.

WE INVEST IN THE PEOPLE WHO MAKE US SUCCESSFUL.

And that starts with you.

SNET Information Technology has two full-time openings for experienced PL/1 Programmer Analysts in New Haven, CT.

PL/1 PROGRAMMER ANALYSTS

These positions are responsible for ongoing support for a mission critical system including maintenance, enhancements, and all phases of project development

Qualified candidates must have at least 5 years of experience in PL/1, IMS DB/DC, and all aspects of system design, development, and implementation.

We offer competitive salaries and an excellent benefits package. For prompt consideration, please send your resume to SNET, **Attn: Mary Porterfield, 555 Long Wharf Drive, 5A, New Haven, CT 06511, or e-mail: mp2823@ctmail.snet.com.**

SNET is an Equal Opportunity Employer All qualified applicants will receive full and fair consideration for employment.

SNET | SBC global networks

Director of Programming

Database system designing company requires the Director of Programming to lead a team of software engineers, network administrators, database administrators and web administrators to create survey products and services. In addition, this individual will manage and participate in the development of software applications, and manage projects which includes determining resource requirements as well as communicating product plans to employees and the marketing department. The Director of Programming will establish schedules, conduct performance and operation reviews, and prioritize day to day business functions. This individual will also be responsible for working with Account Management to address client needs and share responsibility for working with other members of the client support staff to establish a consistent strategic direction across the product line. Qualified applicants must possess a Master's degree in Computer Science or Electrical Engineering with three (3) years related occupational experience that must include three (3) years experience with the following computer software: Visual Studio 6.0 (including Visual FoxPro); SQL Server 7.0; Office 98; VBA, DCOM, Windows 3x, 9x and NT (Server and Workstation); IIS4.0, Exchange Server 5.5; Microsoft Networking; and Web Application Development. In addition, one (1) year of the three (3) years of related occupational experience must include one (1) year in designing algorithms for various survey methodologies and sampling criteria and one (1) year of management experience with programmers. Hours: 8-5. Salary $86,350/yr. Only persons authorized to work permanently in the U.S. need apply. Please forward resume to Jane Hosely, Ref. #1229, Kentucky Department for Employment Services, 275 E. Main St. 2-W, Frankfort, KY 40621. **An equal opportunity employer.**

Software Engineer

to provide on-site consultancy design and development of customized reporting interfaces and conversions for Oracle applications and financials customization; develop and design Oracle client/server applications using Developer/2000, PL/SQL, PERL and AOL, Designer/Developer 2000, Oracle Web server, JAWA and HTML programming, design and develop software systems using CASE System Architect, ERWin, object oriented programming, multiple databases such as Oracle, Sybase, Ingres and Paradox. Require: B.S in Computer Science/Engineering and four years experience in the job offered. Paid travel (40%) to client sites within the United States required. Salary $64,000 per year, 8 am to 5 pm, M-F. Mail resume to: Georgia Department of Labor, Job Order # GA 6470946, 2943 N. Druid Hills Road, Atlanta GA 30329 or the nearest Department of Labor Field Service Office.

WEB DEVELOPER

Be in good company at Blue Cross and Blue Shield of South Carolina. Due to rapid growth, we are currently accepting resumes for positions at our Columbia, SC offices.

Three years developing .netsite or .netsite functionality is required as well as programming experience dependent upon educational background. Strong pc or mainframe relational data base knowledge is also required. In addition we require experience in C, Java applet/servlets, cgi scripting, xml, experience in e-commerce, and client soft web pack and migration from server/mainframe to web.

Must have demonstrated proficiency in site coding, graphics, multimedia authoring, production and encoding, operating systems and E-business.

We offer competitive salaries, flexible benefits program, relocation benefits, & an excellent career development opportunity.

CALL, SEND, FAX OR E-MAIL RESUME.
I/S Recruiting
Blue Cross and Blue Shield of SC
I-20 East @ Alpine Rd., Columbia, SC 29219
FAX 803-419-8096
john.stoughton@bcbssc.com
EOE/M/F/D/V

BlueCross BlueShield of South Carolina

It's Fast. It's Huge. It Crosses Worlds & Dimensions. It's Yours.

Get on board the PaineWebber e-Volution

with an e-Business career.

The future of technology is happening right here, right now, with PaineWebber's e-Business.

We're a preeminent, full-service securities firm, dedicated to providing superior investment advice and financial services to our clients. PaineWebber's e-Business is at the forefront of the latest advances. So, there's no better time than now to join us.

Ready for an e-Volutionary career opportunity? Come join our team. For more information visit:

www.pwevolve.com

PaineWebber

PaineWebber is an equal opportunity employer.

SYCAMORE NETWORKS

Sycamore Networks is the leader in Intelligent Optical Networking. Our products are laying the foundation for the next generation telecommunications infrastructure by bringing intelligence to the massive installed fiber optic network – the backbone of the new public network. We turn raw fiber optic capacity into usable, scalable, cost-efficient bandwidth.

- Software Engineer
- Systems Analyst
- Hardware Engineer
- Network Support Engineer
- Quality Test Engineer
- Diagnostic Engineer
- SOA Engineer
- Network Consultant
- Mechanical Engineer
- Systems Integration Test Engineer

The aforementioned positions are available at all levels and require a minimum of a BS or MS and 0-5 years industry experience.

- Optical Engineer/Scientist with experience in Optical, IP, ATM, SONET network architecture and design. Ph.D. required.

For all positions, send resumes to: Staffing, Sycamore Networks, 16 Elizabeth Drive, Chelmsford, MA 01824. Fax: (978) 256-6594. Or e-mail: resume@sycamorenet.com

We are an equal opportunity employer.

ORACLE PROGRAMMER/ANALYST
Peabody, Massachusetts

We are seeking an individual with two-plus years' Oracle experience to support and enhance our financial application suite. Duties will be focused on our Oracle-based Payroll/Billing and Accounts Receivable systems. Bachelor's degree in computer science or a related field required. Experience with VAX/VMS or Alpha/VMS and programming in C a plus. Candidates with knowledge of SQL languages will be considered. A commitment to service, along with strong interpersonal skills, essential.

We offer an outstanding salary and benefits package to match your performance. Please send your resume to: Randstad, Human Resources, Attn: JP, Centennial Park, One Corporation Way, Peabody, MA 01960. Fax: (978) 538-9560. E-mail: jpeterson@randstadna.com

An EEO/AA Employer

www.randstadna.com randstad

General Motors

True ingenuity. It accelerates our technical insight.

Out-of-the-box thinking and no-holds-barred creativity have made General Motors the global leader in automotive technology and business practices. If you have the credentials and desire to help accelerate GM's leadership into the new millennium, we have exciting opportunities available for you in the following Information Systems-related functions:

Plant Information Technology Manager

Provides single point of contact in support of manufacturing operations plants, including engineering and support for the deployment of competitive manufacturing strategies. Also provides leadership to in-plant information systems and services and assists in the development of an information technology department.

Requires applicable Bachelor's degree, Master's preferred, along with at least 10 years of manufacturing experience implementing information technology solutions, including 5 years of implementing information systems in support of produce vehicle business processes. Project management experience and extensive experience with CIMPLICITY, PMCS, Production floor systems, VAX, PLC, SCADA, control systems and plant system integration are crucial. Experience in the automotive industry is a must.

Systems Engineer - Production Control Systems

Serves as technical consultant to systems projects and communicates technical direction to staff and project teams. Also develops/follows systems interfacing strategies for custom applications and COTS packages, and guides vendors in designing systems for reusability.

Requires Bachelor's degree in Computer Science, Mathematics or Engineering, supported by a strong understanding of software development tools, including integrated development environments (CASE, 3GL, 4GL, Java) and software development experience in both mainframe and client/server environments. Object-oriented technology and development methodologies are preferred.

Information Technology Manager - Design Release and Web Strategy

Manages design/release Engineers and engineering Web applications portfolio, participates in corporate engineering Web strategy creation, and investigates/evaluates potential business process improvement solutions. Also manages IT development/deployment projects, facilitates request processing, and manages IT support suppliers to ensure contractual obligations are met.

Requires Bachelor's degree in Engineering, Computer Science or other related technical field; Master's degree in Business or Finance preferred. At least 8 years' IT technical experience is also required, along with 5 years' Web technology experience, 2 years' Java experience, 5 years' design/release engineering experience and 2 years' finance experience.

Systems Analyst - Production Control and Logistics

Manages business systems in a matrix environment with resources from multiple organizations and suppliers. Also manages projects and scope changes to meet "deliverable" commitments to customers, evaluates/uses innovative technology when selecting/developing new systems, and creates/coordinates/executes comprehensive business system testing activities.

Requires a Bachelor's degree in Computer Science or Supply Chain Management, mainframe and client/server expertise, Microsoft Access and Project proficiency, project management experience, and knowledge of Production Control, Logistics and Worldwide Purchasing Business practices.

Lead Systems Engineer

Leads the design and implementation of advanced software architecture, develops a rapid prototype application in Java, and performs some supervisory functions.

Requires BS in Computer Science, at least 5 - 7 years' experience in software development for embedded applications, plus experience in object-oriented software architecture design. In-depth understanding of large, complex hardware and software environments is necessary. Communications Protocol Design and Implementation experience preferred.

IT Operations Analyst and Technical Support Lead

Oversees daily operations and management of call center locations and implements infrastructure changes as required.

Requires BA or MIS degree, MCSE certification preferred. At least 3 years' experience in call center operations, a basic understanding of LAN/WAN functionalities, and CTI, Telephony and IVRs experience are also needed.

Systems Engineer

Responsible for developing detailed OnStar specifications covering the entire call center system, including infrastructure hardware, network diagrams, communications flow, CSR workstations, application software, and vehicle communications. Leads the evaluation and selection of alternative call center IT solutions for implementing new OnStar product offerings. Develops and analyzes call workflow and advisor call-handling processes.

Requires BS in Electrical Engineering, Computer Science or equivalent, plus at least 3 years' experience in engineering and application development. Experience in business requirement analysis and specification development, as well as call center applications and infrastructure development are also needed. CTI, Telephony, IVRs and asynchronous serial communications experience is preferred.

Project Manager

Performs IT project planning of cost, schedule and deliverables to meet business needs, along with information systems design, project execution, testing, documentation and training, cost reduction analysis; and budget management.

Requires at least 6 years' experience in IT and project management across diverse applications. Experience in performance metrics and business process engineering a plus. Also requires Bachelor's degree in Business, Math, Computer Science, Engineering or related discipline with an Information Technology focus.

Project Manager - Computer-Aided Design

Leads computer-aided design simulation program management, development and maintenance of budgets, development of infrastructure strategy, and customer interface.

Requires BS in Computer Science or Engineering, and at least 10 years' IT experience, including high-performance computing, computer applications, noise and vibration and crashworthiness. Excellent negotiating and verbal/written communication skills are also required, along with database management experience and networking skills. Must also possess language knowledge of UNIX, NT, NASTRAN, DYNA3D, PAM-CRASH, PAM-STAMP, MADYMO, CAD, CAT and CAE.

Database Manager

Performs system and application development and implementation, manages system and software databases, and interfaces with industry and vendors.

Requires at least 5 - 8 years' IT field experience, plus expertise with project planning and applications architecture development. Excellent negotiation and verbal/written communication skills are also needed, along with language knowledge of COBOL, PL/1, C, C++, SEI/CMM (Level 2+).

Project Manager - Web Development

Supports designers and other members of project teams to develop and maintain a variety of dynamic object database driven Web applications using a combination of software languages and tools.

Requires a Bachelor's degree or equivalent experience; Master's degree preferred. Experience in the development of new and maintenance of existing Web-based applications. Experience in application design with specific experience in Web technologies such as Java, JavaScript, HTML, PERL, CGI, Visual Basic, C++, Object C, or other languages. Skill set should also include electronic commerce security concepts and database development.

Web Infrastructure Manager

Provides electronic commerce lab to evaluate commercial electronic commerce applications; defines electronic commerce lab procedures; conducts assessments of electronic commerce market trends; consults with General Motors users on evaluating and implementing electronic commerce solutions, products and services; supports General Motors electronic commerce strategy development; performs electronic commerce benchmarking.

Requires a BS degree in Computer Science, Mathematics or Engineering. Strong knowledge of electronic commerce strategies, standards, technologies and best practices; well-developed verbal/written communication skills; and a high level of creativity and innovation in problem-solving required. Must possess demonstrated leadership skills, strong teamwork and interpersonal skills, the understanding of benchmarking processes and techniques, and the ability to travel overseas.

To be part of our exciting and diverse workforce, post your resume on our Web site at: **www.generalmotors.com/careers** under the Job Opportunities section; or E-mail your resume to: **GM-Jobs@sactoc1.com**. If you prefer, you may mail your resume to: **GM North America, Source Code: ISS03-ITC, P.O. Box 69, Notting Lake, MA 01865-0069.** Please be sure to indicate position desired and include the source code (ISS03-ITC) on the upper right hand corner of your resume, cover letter and/or E-mail subject line. Candidates must accept drug screening and have U.S. citizenship or visa status that permits them to legally accept employment under U.S. immigration laws. No phone calls, please. Principals only, no agents. The policy of General Motors is to extend opportunities to qualified applicants and employees on an equal basis regardless of an individual's age, race, color, sex, religion, national origin, sexual orientation, disability or veteran status.

Work FOR Yourself, Not BY Yourself!

SkillsVillage.com

Being an independent IT contractor doesn't mean that you have to work without **resources and support.** SkillsVillage.com offers independent IT contractors an online eMarketplace to **match your skills** with the best available IT projects. We also offer a full suite of tools and other resources to help you **run your business.** SkillsVillage.com is your personal online advocate, so you **never** have to work **by yourself.**

Come join the village. www.skillsvillage.com

The Future of Development—

Its in the Palm of Your Hand

The software industry changes with the snap of a finger. E-business and the Internet are driving the need to make Rapid Development a reality. Can you get a handle on all the changes? Is there a solution at hand?

It s all within reach at SD 2000-the software industry s defining event. SD 2000 draws the elite. It s where you ll shake hands with the visionaries, innovators, and tool developers who built the industry and are guiding it into the Internet Age.

Make your plans today to explore the platforms, languages, and technologies that are shaping the future of development for the e-generation.

SD 2000

Software Development
Conference | March 19—24
Expo | March 22—24
San Jose Convention Center, San Jose, CA

Contact Us for Information & Registration
800.441.8826
415.905.2702 (Outside the U.S.)
sd2000@mfi.com

www.sdexpo.com

As a top 10 global IT consulting company with nearly 18,000 consultants worldwide, Origin Technology in Business is an innovative leader in delivering creative IT services on a global scale. Our vision? Bigger, better, faster! Utilizing today's and tomorrow's best technology to create the most innovative solutions for our clients.

Do You Share Our Vision?

We're working smarter than ever to fulfill our clients' needs today *and tomorrow* and are seeking visionary professionals to join us in the following areas.

E Business
Application
Change Management

If you're a driven professional and want a chance to get on the fast track, fax/email your resume indicating Dept. Code: RSINFO022800 to 888-551-8223, careers@us.origin-it.com

ORIGIN
TECHNOLOGY IN BUSINESS

www.origin-it.com

EOE M/F/D/V

Join PeopleSoft, the market leader in ebusiness. We're committed to the individuals who make PeopleSoft work and offer a friendly, progessive work environment. With our phenomenal growth, there's never been a better time to get to know PeopleSoft. We've focused our technological strengths on the future and are now offering the following job opportunities in California (Pleasanton, San Mateo and other locations) and across the U.S.:

Software Engineers
(Development, Applications, Technical Support, QA, Test and others)

Systems Analysts

Programmer Analysts

Technical Writers and Curriculum Specialists

Sales Engineers

Consultants
(Professional Services, Product Implementation, Systems and others)

Marketing Managers
(Enterprise Resource Planning/ Supply Chain Management)

The best way to get your resume to PeopleSoft is to apply online at: www.peoplesoft.com/en/career_opportunities/apply_en.html Or, you can e-mail us at jobs@peoplesoft.com. You can also write to us at PeopleSoft, Human Resources Department AD, 4305 Hacienda Drive, Pleasanton, California 94588 Please indicate job code MH-022800-CW

To learn more about us, visit our home on the World Wide Web: http://www.peoplesoft.com

PEOPLESOFT | Applications for eBusiness™

PeopleSoft is an Equal Opportunity Employer and is committed to workforce diversity.

You live in a big city and work on a small network. How about switching that around?

Not a bad trade-off when you consider you'll be working on one of the country's largest privately owned computer networks. It also happens to be one of *Computerworld's* "100 Best Places to Work" and ranked #14 on the Fortune 500 company list. Add to that an easy-going lifestyle, a family-friendly benefits package, a diverse workplace and you'll kick yourself for not having made the switch years ago.

Contact State Farm Human Resources at **jobopps.corpsouth@statefarm.com** for information about current positions. Or visit our website at **statefarm.com**

STATE FARM INSURANCE

Get there with State Farm.

State Farm Insurance Companies • Home Offices: Bloomington, Illinois
An Equal Opportunity Employer

Sr. Programmer Analyst – E-Commerce
Topeka, KS – Salary: $60,000-$65,000

Find the perfect fit for your future at Payless ShoeSource, North America's leading family footwear retailer. Payless ShoeSource operates over 4,500 stores worldwide with annual sales of $2.6 billion. If you are interested in a career at our Corporate Headquarters in Topeka, KS check out the following job opportunities.

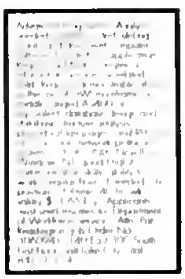
Work with some of the best Information Systems professionals in the retail industry. Responsibilities of the Sr. Programmer Analyst include analysis, design, development, testing and support of business applications for business to consumer retail sales utilizing many types of Internet web-based, client-server and stand-alone computer technologies. In this E-Commerce support role the preferred experience includes DB2 database, Unix, HTML/XML, Perl, Java and C languages. Bachelor's degree in a related field and 5+ years programming experience in a mainframe or client-server environment required, including 1-2 years in E-Commerce, preferably IBM Net.Commerce.

Payless ShoeSource offers a fast-paced, professional environment with a strong tradition of internal promotion. Payless offers extremely competitive salaries, benefits and relocation assistance. If you would like more information on Payless ShoeSource please visit our website www.payless.com.

For immediate consideration, please send your resume to Payless ShoeSource, Attn: Executive Recruiting (IT), P.O. Box 1160, Topeka, KS 66601, Fax: 785-295-2026, Email: shoelite@paylessshoesource.com

Payless ShoeSource®

Hardware/Firmware Engineers: Conduct research and development of new technologies for computer and communications system. Exp. and/or background in the following areas (not all req): servo control theory and algorithm design, analog/digital circuit design and simulation, logic design and simulation using ALTERA programmable devices, Hardware Synthesis, magnetic recording head processing, electroplating, etching, photolithography, vacuum deposition, and magnetic material characterization, FPGA/ASIC/Custom design and timing analysis, microprocessor based systems hardware and firmware design, MPEG-2 transport systems, digital signal processing, PC bus interface, board layout, instrumentation and C/C++ programming. Req: MS in EE/Comp Eng + 1, 2 or 3 yrs exp (or equivalent) depend on position or BS +3-8 yrs depend on position in Austin, TX, San Jose, CA, Hawthorne or Yorktown Heights, NY. Endicott, NY. Competitive salary. Please send resume w/clipping of ad to: IBM Corporation, Technical Recruiting, Job Code CW02B00, P.O. Box 218, Yorktown Heights, NY 10598
An equal opportunity employer



IT careers.com
where the best get better
1-800-762-2977

Imagine an IT job in your dream city with a boss who wants you to have a life outside the office.

Or go to dice.com and actually find one.

dice.com
High tech jobs online

170,000 high tech jobs, including your next one.

AN EARTHWEB SERVICE

Help BUILD a start-up. With Big Five clout.

Ernst & Young. The name says it all. And the opportunity speaks loud and clear. We're E&Y Applications Services, LLC, a wholly-owned subsidiary of Ernst & Young, LLP, and a start-up company bursting with potential. As a group that provides application support services to major corporations, our growth is creating tremendous opportunity for IT professionals.

EXPERIENCED IT PROFESSIONALS

We're seeking **full-time Architects and Developers** in our **Chicago office** for engagements today and in the future with the following skill sets.

JAVA	WEB	ADDITIONAL
• Enterprise Java Beans	• Netscape Enterprise Server	• EJB's
• Servlet Development	• WebLogic	• RMI
• Visual Age Java	• SpatialX	• Firewalls & routers
		• OO methodologies

Candidates should possess 5+ years of experience in applications design/development and systems architecture as well as 3+ years of experience in Java/Web development.

SOFTWARE TESTERS AND LEADERS

We are seeking **full-time professionals** for our **Kansas City** office with 2+ years experience testing in a Java/UNIX environment. Experience in Web application testing with Oracle, WebLogics, EJB, and WinRunner highly desired. Telecommunications experience a plus

We are also seeking professionals with following skill sets:

• COBOL • CICS • C/C++ • SmallTalk • UNIX

Qualified professionals should send their resumes to: **resumes@eyadc.com EYAS-Recruitment Dept., 224 S. Michigan Ave., Suite 1700, Chicago, IL 60604.** We are an equal opportunity employer.

Visit our website at:
www.eyeppservices.com

EY|AS
ERNST & YOUNG APPLICATIONS SERVICES

@e www.ae.com

COOL, CASUAL, CUTTING-EDGE...

AMERICAN EAGLE OUTFITTERS is growing by 90+ stores this year, and also growing its existing **eCommerce team.** Our proven success at the store level will now filter to the web. We have made sure that you get the same shopping experience at home that you would in one of our stores. You can count on AE to continue to be Cool, Casual and Cutting-Edge.

AE-DIRECT • This is our team name on the Internet. Our company culture is unique and we are seeking individuals who can thrive in a supportive environment. If you are creative and need an environment that allows you to express yourself, then consider these opportunities:

Site Analyst
Programmers
Buyers
Sr. Web Developer
Merchandise Planners
Web Developer

Just like our culture, we are not closed-minded. These are not the only opportunities we have available, so feel free to submit your credentials for your area of interest. This is your chance to be a part of a company that believes in its people and providing the best working environment possible

Excellent Benefits Package
Casual Work Environment

For immediate consideration, please FAX or E-mail resumes, with salary history, to: AMERICAN EAGLE OUTFITTERS, INC., FAX: (724) 779-5568
E-mail: Fabus@AE.com. Positions based in Pittsburgh, PA. EOE. M/F/V/D.

AMERICAN EAGLE OUTFITTERS

SHOULDN'T TECHNOLOGY BE AT THE CORE OF YOUR MBA?

We've got concentrations in e-business and information systems.

For more information contact:
Zam Haque
The Lally School of Management and Technology at Rensselaer
Phone: (518) 276-6586
Email: management@rpi.edu

We invite you to attend an open house on March 31st at the Troy, NY, campus. Please call for details

Rensselaer

Computer

NOVASOFT INFORMATION TECHNOLOGY

Rapidly growing software consulting firm based in Lawrenceville NJ seeking qualified professionals (min bach degree) for the following nationwide positions

- Technical Recruiters/Data Processing Professionals (Sourcing)
- Client/Server Developers (C C++ UNIX VB Oracle or Lotus Notes)
- System Admin (Unix or Lotus Notes)
- DBAs (Oracle Sybase SQL Server)
- ERP-CRM Profls (Baan Siebel PeopleSoft MFG/Pro or SAP)
- Sales and Marketing Executive
- HR Professionals

Excellent salary and benefits package available. Fax or email resume to: Novasoft HR Dept Fax 609-588-5577 Email: resumes@novasoftinfo.com

For IT Careers go to www.dice.com
dice.com
High tech jobs online
AN EARTHWEB SERVICE

world.com

Future-minded organizations around the world recognize the imperatives of the new C... To become leaders in the industry, organizations know they must embrace networking technologies.

AT&T Solutions is increasingly recognized as the preeminent provider of custom network solutions. From strategic business planning, through the design and the deployment of new systems and business processes, we enable our clients to move from outdated business models to cutting edge practices.

AT&T brings to the e-Business marketplace the same reliability, scale and innovation that we bring to network solutions. We are uniquely positioned to meet our clients' challenges as they quickly turn up mission critical e-applications.

Our incredible growth has created several outstanding opportunities for individuals who wish to grow with AT&T by identifying and delivering e-Business solutions to our Global 2000 clients. Immediate opportunities are available for e-Business Professionals in the following areas:

Business Developers:
job codes 557, 558
Sales:
job codes 470, 469, 517, 558
Project Managers:
job codes 462, 470, 469, 517
Architects:
job code 39
Developers:
job codes 557, 558
Business Continuity/Disaster Recovery

It's All About Networking.

Visit our website at:
http://www.attsolutions.com
and reference job code and/or job title.

AT&T Solutions is an Equal Opportunity Empl...

Software Engineers

Iris Associates, the creator of Lotus Notes, Lotus Domino and Lotus Domino Designer seeks to fill a number of Software Engineering positions at various levels of responsibility at our location in Westford, MA.

All positions require a BS degree (or equivalent) in Computer Science or other relevant field together with at least 4 to 7+ years relevant experience.

Senior Software Engineer (QuickPlace Internals)
• (XML/SSL processors in Java and C++)

Principal Software Engineer (Notes Client Editor)
• (HTML and Int'l char processing/bi-directional)

Project Manager (Domino Web Engine)
• (Multiplatform HTML, DHTML, Javascript)

Competitive benefits and starting salaries from $48,700-$102,600, commensurate with the position's specific responsibilities, accompany this exciting high-tech environment growth opportunity.

Please mail or fax your resume, indicating Reference Code "IMSP," to: Iris Associates, Attn: Christine Chupka, Human Resources, Five Technology Park Drive, Westford, MA 01886; Fax: 978/392-6060. Email: christine_chupka@iris.com Visit: www.iris.com. Iris Associates, a subsidiary of Lotus/IBM, is an Equal Opportunity Employer

NET RECRUITING. A HANDS-ON SEMINAR BY THE AUTHORS OF CAREERXROADS. BROUGHT TO YOU BY ITCAREERS

If you need to recruit in 2000, the Internet will be your greatest tool and your competitive advantage.

Learn the latest in recruiting techniques, key products, and more from Mark Mehler and Gerry Crispin. This one-day interactive workshop will provide you with:

- Internet staffing models and strategies for both large and small organizations
- The best sites for realizing specific staffing objectives
- A view of staffing on the Web today with a vision for tomorrow
- How to incorporate the use of Internet and Intranet applications into your recruiting strategy and process

PRESENTED BY INTERNET AUTHORITIES GERRY CRISPIN & MARK MEHLER

Gerry and Mark have conducted 100s of presentations about the direction of staffing for employment professionals, associations and job-seekers. In the last 12 months they have been invited to present to nearly every national and regional human resource association (IACPR, SHRM, EMA, IHRIM, NHRA, NACE)

MARK YOUR CALENDAR

February
14-15 Atlanta
17-18 Philadelphia
23-24 Chicago
28-29 San Francisco
Single Registration: $895

March
1-2 LA
7-8 Dallas
9-10 Houston
14-15 NY
16-17 Pittsburgh
27-28 Boston
29-30 Cleveland

Register by phone: Call 1-800-854-7166
Register online: careerxreg@itcareers.net

Note: Participants who attend the 1 day workshop can also opt for an additional 1/2 day of hands-on consulting with the instructors. This is conducted in a small group (limited to 10) and is designed to refine individual strategies and plans that were begun during the first day. Individuals interested in this popular 1/2 day consulting feature will be contacted directly by the instructors. Cost is $595.

Software Engineers

Conduct research & develop, Test & maintain programs, which comprise a portion of a system product or future products. Exp &/or background in the following areas (not all req): relational database systems, database management systems, distributed management and recover techniques, TCP/IP, Socet IPC, C, C++, SQL, AIX, UNIX, JAVA, object-oriented programming languages Lotus Notes, Windows (95, 98, NT) operating systems, 80x86 assembly language, Soft-ice debugger and device drivers for Windows, data security, Internet/Intranet WEB applications, HTTP, CGI, graphical user interfaces, object-oriented analysis and design techniques, domain modeling techniques, version m management, configuration management, multimedia standards (MPEG-4, H.2xx, G.7xx, RTP/RTSP). Req. MS in CS/Math/ME/EE/Comp. Eng. + 1, 2 or 3 yrs. exp (or equivalent) depend on position or BS +3-5 yrs. exp depend on position in Austin, TX, San Jose, CA, Hawthorne, NY or Yorktown Heights, NY, Endicott, NY. Competitive salary. Please send resume w/clipping of ad to: IBM Corporation, Technical Recruiting, Job Code CW02A00, P.O. Box 218, Yorktown Heights, NY 10598. An equal opportunity employer.

Mainframe & Client Server Opportunities

With IT project teams working across eight time zones, from seven countries on four continents, IMRglobal is always looking for more opportunity.

We are now accepting applications from software programming professionals with mainframe and client server experience.

Programmer/Analysts
System Analysts
Technical Consultants
Project Leaders
Project Managers

For consideration, please forward a resume to: IMRglobal, Attn: Recruiting, 100 S. Missouri Avenue, Clearwater, FL 33756, fax (727) 467-9941, e-mail: jobs@imrglobal.com. See us on the web at: www.IMRglobal.com. EOE.

IMRglobal
the power of vision.
the value of results.
• North America, • Europe, • Asia-Pacific

NEED TO HIRE.

START WITH US.

ITcareers and ITcareers.com reach more than 2/3 of all US IT workers every week. If you need to hire top talent, start by hiring us.

Call your ITcareers Sales Representative or Janis Crowley at 1-800-762-2977.

IT CAREERS
where the best get better

ITcareers.com

It's the way we encourage our people to contribute and achieve!

What is "The HP Way?" In part, it's the way we approach the work we do, the products we create and the solutions we deliver. At HP, we offer customers a new spirit of adventure, one that's all about achievement, improvement, and realizing dreams. It's a spirit that comes through to our team members, and our work environment. We are open to new ideas and diverse perspectives. We are curious about how things work and how to improve people's lives. We have the energy and enthusiasm to constantly push for innovative and useful solutions. The way we see it, when anything is possible, every day is an adventure.

We invite you to expand your career possibilities with HP's Enterprise and Commercial Business in one of the following areas: **Sales, Information Technology, and Customer Engineering.**

For all positions you must have one or more of the following competencies/skills: Direct Sales; Customer Service; Account Management; UNIX/HP-UX, OpenView; E-Commerce; Internet; NT; IT Solutions; Database Management; HW/SW Installations, Repairs, and Updates; Developing Sales Solutions; Technical Phone Support.

HP offers competitive compensation and excellent benefits, including profit sharing, stock purchases, 401(k) and a retirement plan. For consideration, please send your resume with cover letter to: HP Employment Response Center, Event #8340, 3000 Hanover Street, MS20AZ, Palo Alto, CA 94304-1181, FAX: 650-852-8138, or e-mail: resume@hp.com. Please reference Event #8340 in all correspondence.

HP Company is an equal opportunity employer dedicated to affirmative action and work force diversity.

invent

AD INDEX

SALES OFFICES

Computerworld Headquarters:
500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

SVP/Publisher
Peter C. Horan

Vice President/Associate Publisher
Sherry Driscoll

Vice President/Customer Solutions
Elaine R. Offenbach

Vice President/Key Accounts
Marge Bonomo

Vice President/Key Accounts
Linda Holbrook

NORTHEAST
DIRECTOR: Laurie Mannone **DISTRICT MANAGER:** Paul Reiss **SALES OPERATIONS MANAGER:** Leslie Murray **SALES ASSOCIATES:** Jane Colonna, Samantha Hadley 500 Old Connecticut Path Framingham MA 01701 (508) 879-0700 Fax (508) 270-3882 TDD (800) 428-8244

SOUTHEAST
DIRECTOR: Lisa Ladle Wallace 5242 River Park Villas Dr St. Augustine, FL 32092, (800) 778-5622 Fax (800) 778-8622

METRO
DIRECTOR: Fred LaSapio **DISTRICT MANAGER:** John Bosso **FIELD MARKETING EXECUTIVE:** Maureen Brady **SALES & OFFICE ASSOCIATE:** Susan Kusnic **SENIOR SALES ASSOCIATE:** Jean Dellarobba **SALES ASSOCIATE:** John Radzinski, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax (201) 587-9255, (201) 587 1288 TDD (800) 208-0288

NORTHWEST
DIRECTOR: Demyca Kehoe **DISTRICT MANAGER:** Kevin Ebmeyer **SALES OPERATIONS MANAGER:** Emma Hung **SALES ASSOCIATE:** Camille Dasing, Chris Kallin 177 Bovet Road, Suite 400 San Mateo CA 94402 (650) 357-0200 Fax (650) 524-7000 TDD (800) 900-3179 **SENIOR SALES ASSOCIATE:** Jill Culley 10900 N.E. 8th Street Suite 820 Bellevue, WA 98004 (425) 451-0211 Fax (425) 451-3822

MIDWEST
DIRECTOR: Blayne Long **SALES ASSOCIATE:** Cathy Vice 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Fax (847) 827-0690

BAY AREA
DIRECTOR: Ernie Chamberlain **SALES ASSOCIATES:** Michael Lynch, 177 Bovet Road Suite 400 San Mateo, CA 94402 (650) 357-0200 Fax (650) 524-7001 TDD (800) 900-3179

SOUTHWEST
DIRECTOR: Jennifer Hedges **SALES ASSOCIATE:** Doreen Robinson 14651 Dallas Parkway, Suite 816, Dallas, TX 75240 (972) 233-0882 Fax (972) 701-9008 TDD (800) 822-4916

SOUTHERN CALIF.
DIRECTOR: Cindy Wager **FIELD MARKETING EXECUTIVE:** Ravel Duvent **SALES ASSOCIATE:** Jill Stevens, 18831 Von Karman Avenue, Suite 200 Irvine, CA 92612 (949) 250-3542 Fax (949) 476-8724

ADVERTISING OPERATIONS PRINT
DISPLAY ADVERTISING COORDINATOR: Peter Coen, (508) 879-0700 Fax (508) 879-0446

COMPUTERWORLD
MARKETING: Vice President Marketing/Derek Hulitzky, Copywriter/Steve Stamates **CIRCULATION:** Vice President Circulation/Maureen Burke **PRODUCTION:** Production Director/Christopher P. Cuoco, Production Manager/Beverly Wolff **DISTRIBUTION:** Distribution Manager/Bob Wescott **RESEARCH:** IT Market Analyst/David Daoud, Research Analyst/Matt Duffy, Research Analyst/Candace O'Keefe

CUSTOM PUBLISHING
BOSTON: Director Business Development/Lee Leger, Sales Operations Manager/Maria McBrath, Event Operations Manager/Faith Pasternak, Event Program Manager/Michael Meleedy, Senior Graphics Production Coordinator/Heidi Greadley, Editorial Director/Ellen Fanning, Editor/Stefanie McCann, Online Account Executive/Gregg Pinsky 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax (508) 875-6310 **SAN FRANCISCO:** 177 Bovet Road, Suite 400, San Mateo, CA 94402 (650) 357-0200 Fax (650) 524 7000 **WEST:** Director/Peter Oliner 1011 East Touhy Avenue, Suite 550 Des Plaines, IL 60018 (847) 759-2719, Fax (847) 827-0690

MARKETPLACE/DIRECT RESPONSE CARDS
Sales Manager/Laurie Gomes, (508) 820-8249 Maureen Roberti/Sales Operations Manager, (508) 271-8007/8010 Account Director/Linda Clinton (508) 820-8268, 500 Old Connecticut Path Box 9171, Framingham, MA 01701-9171 Fax (508) 875-3701 Account Executive/Gale Tedeschi, (201) 587-7537 Market/Team Specialist, New Business Development/Norma Tamburrino, (201) 587-7374, Mack Cali IV 81 South Paramus Rd., 3rd Floor, Paramus, NJ 07652 Fax 201-712-0430

IT CAREERS ADVERTISING SALES OFFICES
Vice President-General Manager/Janis Crowley; Marketing Director/Kelli Flanagan, Marketing Assistant/Chantelle Finney; Operations Manager/Donna Kent, Assistant Operations Manager/Jeanne Gallagher, 155 Bovet Road, Suite 101, San Mateo, CA 94402 (800) 762-2977, Fax (650) 286-2770 **NEW ENGLAND:** Senior Account Manager/Nancy Mack, 500 Old Connecticut Path, Framingham, MA 01701-9171 (866) 568-5056 Fax (650) 286-2770 **MID-ATLANTIC:** Regional Manager/Deanne Holzer, (212) 828-6691 500 Old Connecticut Path, Framingham, MA 01701-9171 (866) 568 5056 Fax (650) 286-2770 **SOUTHEAST:** 500 Old Connecticut Path Framingham MA 01701-9171 (866) 568-5056 Fax (650) 286-2770 **MIDWEST:** (847) 705-1687 Senior Account Manager/Laura Wilkinson, (773) 248-4301 Account Manager/Donna Duga, (312) 567 1390 Sales Associate/Gloria Gonzalez, 155 Bovet Road Suite 101 San Mateo CA 94402, (800) 762-2977 Fax (650) 286-2770 **WEST:** Regional Manager/DeForest Smith, Account Manager/Andrea Denny Sales Associate/Gloria Gonzalez, 155 Bovet Road, Suite 101, San Mateo, CA 94402 (800) 762-2977, Fax (650) 286-2770

LIST RENTAL - POSTAL: Rich Green, (508) 370-0832, e-mail: rich_green@idg.com. **LIST RENTAL - E-MAIL:** Christine Cahill, (508) 370-0806, e-mail: christine_cahill@idg.com **MAILING ADDRESS:** IDG List Services, P.O. Box 9151, Framingham, MA 01701-9151 FAX: (508) 370-0020

COMPUTERWORLD

President/CEO
Joseph L. Levy

Vice President/CIO
Rick Broughton
(508) 620-7700

Senior Vice President/Publisher
Peter C. Horan
(650) 524-7017

Vice President/Marketing
Derek Hulitzky
(508) 620-7705

Vice President/Editor in Chief
Maryfran Johnson
(508) 620-7724

Vice President/ Manufacturing Operations
Carolyn Medeiros
(508) 620-7733

Vice President/General Manager Enterprise Business Solutions
Ronald L. Milton
(508) 820-8661

Vice President/ Strategic Circulation Operations
Eric Schmierer
(508) 820-8217

Senior Vice President/ Finance & Operations
Matthew C. Smith
(508) 820-8102

INTERNATIONAL DATA GROUP

CHAIRMAN OF THE BOARD: *Patrick J. McGovern* **PRESIDENT/CEO:** *Kelly Conlin*

IDG

Computerworld is a publication of International Data Group, which informs more people world wide about information technology than any other company in the world. With annual revenues of $2.35 billion, IDG is the leading global provider of IT media, research, conferences and expositions. IDG publishes more than 290 computer newspapers and magazines and 700 book titles in 75 countries, led by Computerworld/Infoworld, Macworld, Network World, PC World, Channel World, and the "...For Dummies" global product lines. IDG offers online users the largest network of technology sites around the world through IDG.net (http://www.idg.net) which comprises more than 225 targeted web sites in 55 countries. IDG is also a leading producer of 168 computer-related expositions in 35 countries, and its research arm, International Data Corporation (IDC) provides computer industry research and analyses through 49 offices in 41 countries world wide. Company information is available at http://www.idg.com

ADVERTISERS INDEX

Active Software www.activesw.com	10
American Power Conversion www.apcc.com 888-289-APCC	25, 27
ASPECT www.aspect.com	39
CapRock Enterprise Services www.caprock.com	60*
Citrix www.citrix.com	17
Comdex Spring www.zdevents.com	60*
Compaq Building Storage Networks www.compaq.com	58
Computer Associates Unicenter TNG www.cai.com	C2
Computer Associates OS/390 www.cai.com	18-19
Comsys www.comsys.com	26
Concert www.concert.com	40
Content Technologies www.mimesweeper.com	47
Great Plains Software www.gps.com	11
IBM www.ibm.com	51
Innovation Data Processing www.innovationdp.fdr.com	9
InterSystems Corp. www.intersys.com	64
Kingston Technology www.kingston.com	C4
Micron www.micronpc.com	15
Microsoft Developer www.microsoft.com	22-23
Microsoft Doculabs www.microsoft.com	62
Microsoft SQL Server www.microsoft.com	63
Microsoft Windows 2000 www.computerworld.com/microsoftsupplement	42/43
Microstrategy www.microstrategy.com	31
OPUS 360 www.freeagent.com	37
Oracle Corp. www.oracle.com	7
Powerware www.powerware.com	65
Premier 100 IT Leaders Conference www.computerworld.com/p100	94
SAS Institute www.sas.com	21, 45
Sprint www.sprint.com	5
Storage Networking World www.computerworld.com/snw	43
Storage Networking White Paper	58/59
TrainingNet www.trainingnet.com	57
T.V. Interactive www.tvinet.com	C3
Windows 2000 Advantage www.Windows2000Advantage.com	28-29
ZoneTrader.com www.zonetrader.com	13

*Regional Select Edition

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to,
Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription
All address changes, title changes, etc. should be accompanied by your address label. If possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here: **Address shown:** ❑Home ❑Business

NAME
COMPANY
ADDRESS
CITY STATE ZIP

Other Questions and Problems
It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: **1-800-552-4431**
Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

NAME TITLE COMPANY ADDRESS CITY ST ZIP

COMPUTERWORLD allows advertisers and other companies to use our mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list, please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

Learn from the best IT Leaders how to Lead & Innovate at Computerworld's Premier 100 IT Leaders Conference!

Network with the best and learn

At Computerworld's Premier 100 IT Leaders Conference, June 19-21, 2000 at the Marriott Desert Springs Resort & Spa, you'll meet and learn from the finest leaders in information technology today. Since many who will attend and present will be Computerworld's Premier 100 IT Leaders – Fortune 1000 IT executives honored by Computerworld as outstanding practitioners of leading-edge IT – you'll see early adopters of technology and business-savvy executives who excel at leveraging strategic information resources.

Get a broad perspective from IT Leaders in just 3 days

Computerworld's Premier 100 leaders are fundamentally technologists who also understand business needs, take calculated risks and lead through innovation. They are Vice Presidents of IT, CIOs, IS directors and business managers honored as Computerworld's Premier 100 from a wide swath of vertical industries. When you attend this three-day event, you'll hear about proven examples of how these IT Leaders have advanced their organizations through innovative leadership of IT.

Discuss compelling IT issues in highly interactive sessions

Crafted by Computerworld editors, this conference presents a radical departure from the standard IT conference. With a focus on great ideas, best practices and real applications of IT strategy from the very IT Leaders who are putting them in place in business today, you'll gain direct insight from leading user organizations. Instead of one-way presentations, the major conference sessions at Computerworld's Premier 100 IT Leaders conference will provide highly interactive, entertaining discussions with IT leaders and industry experts – each moderated by Computerworld editors in a town-hall meeting style. Key topics will center on the intersection of technology and business in areas critically important to IT Leaders.

What's more, when you attend Computerworld's Premier 100 IT Leaders Conference, you'll take away real-world examples of leading-edge IT, and great ideas about how to apply them in their own industries and organizations.

- **E-Business Realities and How to Deal with Them**
  Tap IT Leaders' strategies on how to enhance your business online, how to confront the rise of 'net-based and collaborative applications, how to make online communities work, and how to prepare for broadband.
- **Customer Relationship Management and Best Practices**
  Learn about best practices of IT Leaders in applying Next-Generation ERP and Customer Relationship Management (CRM), supply chain issues and voice recognition technologies in the enterprise.
- **Protecting your Company's Most Strategic Assets**
  Discover IT Leaders' application of Internet security as it relates to E-commerce and privacy issues as well as their view of up-and-coming technologies and standards to watch.
- **Pervasive Computing and How to Brace Yourself and Your Organization**
  Find out how IT Leaders are addressing mobile, remote, and wireless technologies as they promise to impact us all in the very near future.

Premier 100 IT Leaders Work For:

REGISTER TODAY

FOR COMPUTERWORLD'S PREMIER 100 IT LEADERS CONFERENCE

Earlybird Registration (on or before May 26)	Pre-Registration (May 27–June 19)
$1,295	$1,495

Registration fees include entrance to Computerworld's Premier 100 IT Leaders Conference and all meals and networking receptions.

For more information or to register call 1-800-343-6474 x8529
or visit www.computerworld.com/p100

PERCENT	
Open Text Corp. (H)	40.0
Vitesse Semiconductor Corp (H)	37.9
Sterling Commerce Inc.	36.9
Transaction Sys. Architects	28.3
Cabletron Systems (H)	28.0
Westell Technology Inc. (H)	28.0
Uniphase (H)	26.7

PERCENT	
Call-Net Enterprises	-14.5
Open Market Inc.	-13.7
Picturetel	-12.9
Tellabs Inc.	-12.4
Bisys Group Inc.	-10.7
Madge Networks	-10.4
BellSouth (L)	-9.8
Adaptec	-9.8

DOLLAR	
Uniphase (H)	58.38
Ariba Inc. (H)	38.25
Network Appliance Inc. (H)	34.63
Vitesse Semiconductor Corp (H)	34.31
Veritas Software Corp. (H)	20.94
Informatica Corp. (H)	20.22
Nextel Communications (H)	19.63
Network General	18.44

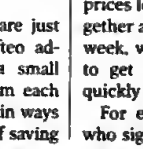
DOLLAR	
Juniper Networks Inc. (H)	-20.94
BCE Inc.	-8.50
Nortel Networks Corp.	-7.44
Open Market Inc.	-7.31
IBM	-7.19
Tellabs Inc.	-7.13
Computer Associates Int'l Inc.	-6.88
Bisys Group Inc.	-6.13

Site Opens Market To Small Investors

Low-cost service requires no minimum investment

BY MARIA TROMBLY

SMALL INVESTORS who are just getting started are often advised to put away a small amount of money from each paycheck. The two main ways to invest at that level — short of saving cash until there's enough for a significant stock purchase — are mutual funds and the direct investment programs that some publicly traded companies offer.



Unfortunately, many of the most popular technology companies don't offer such programs, or they require the investor to do a good bit of paperwork.

Now the Internet has made it possible for a third party — Bellevue, Wash.-based Netstock Direct Corp. — to offer direct investment plans in more than 2,000 companies through its ShareBuilder.com site.

This service, which is being marketed directly to consumers as well as to other online brokers, requires no minimum investment and costs only $2 per transaction.

According to Netstock CEO Jeff Seely, the company is able to keep prices low by bundling transactions together and processing them just once a week, while other online brokers race to get their transactions through as quickly as possible.

For example, Seely said customers who sign up to buy $200 worth of Microsoft Corp. [Nasdaq:MSFT] stock once per month aren't concerned about exactly what time of day — or what day of the week — the shares are purchased.

And if $200 doesn't buy an even number of shares, Netstock will buy and hold the remaining fraction of a share.

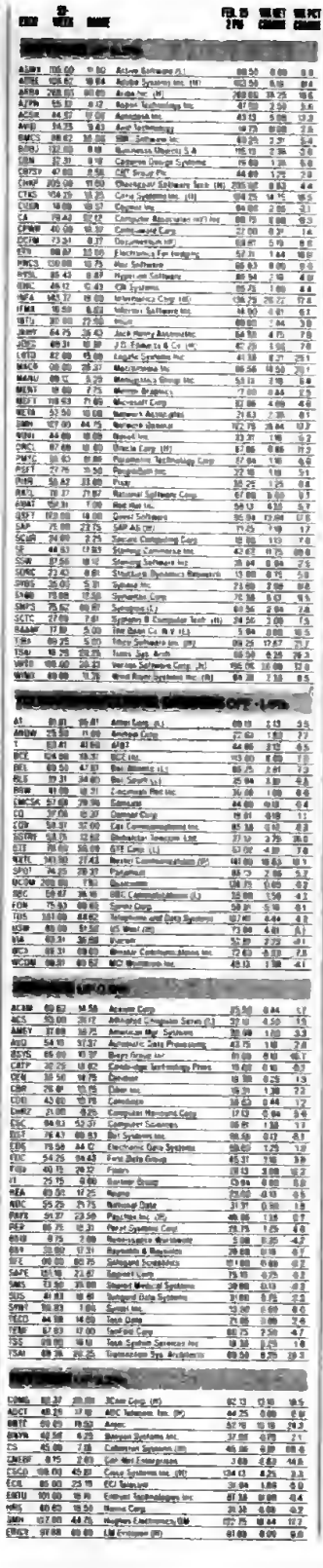
Customers can sign up online and arrange for automatic transfers from paychecks or bank accounts. ShareBuilder.com handles all paperwork and keeps track of the informatioo necessary for tax purposes.

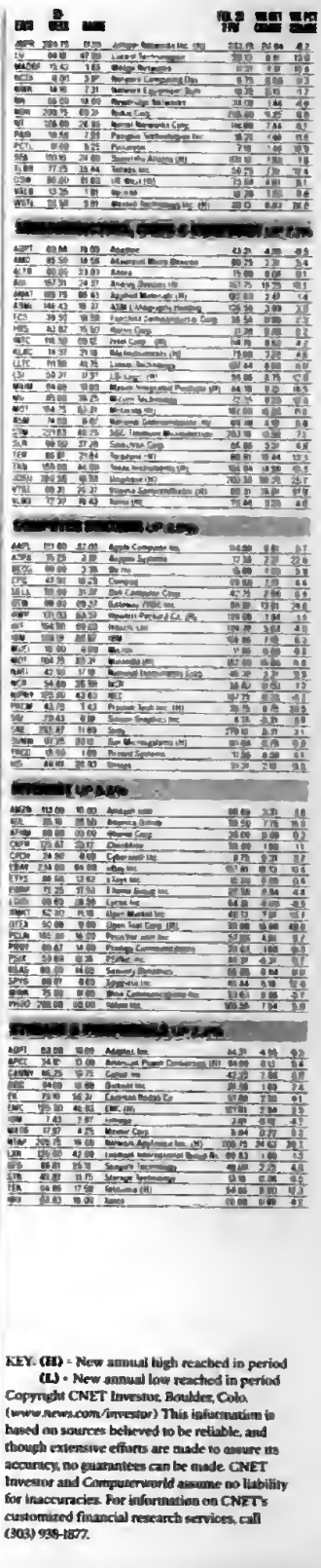
Although ShareBuilder.com is a new service — the Web site debuted in December — a number of other companies are already offering it through their sites.

"ShareBuilder.com enables our users to act oo the informatioo they get on our Web site," said Sara Gilbertson, senior vice president of marketing at McLean, Va.-based Womenconnect.com Corp., a business site that targets professional women and women business owners.

Other sites that offer links to ShareBuilder.com include Seattle-based Go2Net Inc.'s [Nasdaq:GNET] Silicoo Investor and New York-based TheStreet.com Inc. [Nasdaq:TSCM].

- No minimum investment
- Fee of $2 per transactioo ($1 for children's and custodial accounts)
- Opportunity to invest a fixed amount of money per week, month or other time period
- Automatic investing through payroll deductioo or bank account withdrawal





KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright CNET Investor, Boulder, Colo. (www.news.com/investor) This information is based on sources believed to be reliable, and though extensive efforts are made to assure its accuracy, no guarantees can be made. CNET Investor and Computerworld assume no liability for inaccuracies. For information on CNET's customized financial research services, call (303) 938-1877.

How to Contact Computerworld

TELEPHONE/FAX

Main phone number (508) 879-0700
All editors unless otherwise noted below
Main fax number (508) 875-8931
24-hour news tip line (508) 820-8555

E-MAIL

Our Web address is **www.computerworld.com.** All staff members can be reached via e-mail on the Internet using the form: **firstname_lastname@computerworld.com.**

All IDG News Service correspondents can be reached using the form: **firstname_lastname@idg.com.**

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to: **letters@computerworld.com.** *Include your address and telephone number*

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTIONS/BACK ISSUES

Subscription rates: U.S., $48/year; Canada, $110/year; Central and South America, $150/year (surface); all others, $295/year

Phone (800) 552-4431
E-mail circulation@computerworld.com
Back issues (508) 820-8167

REPRINTS/PERMISSIONS

Phone Ray Trynovich (717) 399-1900, ext. 124
E-mail rtry@rmsreprints.com

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter

Editor in Chief Maryfran Johnson (508) 820-8179
Editorial Director, Print/Online Patricia Keefe (508) 820-8183

DEPARTMENT EDITORS

News Editors Michael Goldberg (508) 620-7789
Anne McCrory (508) 820-8205
Sharon Machlis (508) 820-8231
Thomas Hoffman (914) 988-9630
Business Editor Kevin Fogarty (508) 620-8246
Technology Editor Robert L. Scheier (508) 820-8226
Washington Bureau Chief Mitch Betts (202) 347-6718
West Coast Bureau Chief Mark Hall (650) 524 7110

REPORTERS

Internetworking, telecom/wireless, defense and aerospace James Cope (219) 273 5369
Application development, automotive Lee Copeland (773) 394 0402
Careers, labor issues, outsourcing, application service providers, health care Juleikha Dash (804) 295-9512
Microsoft operating systems, BackOffice, Novell, food processors/suppliers Dominique Deckmyn (650) 524 7112
Security, encryption, viruses Ann Harrison (650) 524 7117
Network, systems management, legal issues Sami Lais (301) 270 1427
Food, retail and restaurant General assignment, media/entertainment Christine McGeever (650) 524 7113
Microsoft, investigative reports Kim S. Nash (773) 275-4133
General assignment, storage Kathleen Ohlson (508) 820-8215
Java, extranets, e-commerce technologies, retailers General assignment, transportation/carriers Carol Silva (508) 628-4731
ERP, client/server software Unix applications, process manufacturing Linda Rosencrance (508) 628-4734
State/federal government, antitrust, legal issues, politics IT management, financial services Craig Stedman (508) 820-8120
Large systems/high-end Web server technology, hardware, heavy manufacturing Patrick Thibodeau (202) 333-2448
Jaikumar Vijayan (508) 820-8220 Maha Trombly (413) 323-0842

OPINIONS

Staff Columnist Frank Hayes (503) 252 0100
Columns Editor Rick Saia (508) 820-8118

FEATURES EDITORS

IT management, year 2000 Rick Saia (508) 820-8118
Reviews Russell Kay (508) 820-8175
Field Report, reviews, Emerging Companies Cynthia Morgan (508) 820-8177
IT Careers David B. Weldon (508) 820-8166

FEATURES WRITERS

Gary H. Anthes (202) 347-0134
Matt Hamblen (508) 620-8567
Julia King **business-to-business e-commerce** (610) 532-7599
Kathleen Melymuka (508) 628-4931,
Mathew Schwartz (508) 820-8285

RESEARCH

Lorraine Cosgrove **research director;** Mari Keefe, **editorial research specialist;** Lee Sydney, **online researcher;** Allison Wright, **editorial research intern;** Rayna Melendy **graphics coordinator**

COPY DESK

Jamie Eckle, **managing editor/production** (508) 820-8202
Jean Consilvo **assistant managing editor/production**
Pat Hyde, **assistant managing editor/special projects**
Bob Rawson **senior copy editor** Jacqueline Day Eugene Demaitre
Michele Lee, Julie Walsh **copy editors**

GRAPHIC DESIGN

Tom Monahan, **design director** (508) 820-8218 Stephanie Faucher **art director/features,** Mitchell J. Hayes **art director/news** John R. Brillon April O'Connor, David Waugh **associate art directors,** Julie D'Errico **graphic designer,** Rich Tennant, John Klossner **cartoonists**

ADMINISTRATIVE SUPPORT

Linda Gergonne **office manager** (ext. 8176)
Connie Brown (ext. 8178) Lorraine Witzell (ext. 8139)
Gussie Wilson (650) 524 7035 **editorial assistants**

COMPUTERWORLD ONLINE

Tom Monahan **director, online and design** (508) 820 8218
Sharon Machlis, **online news editor** (508) 820-8231
Thomas Hoffman, **online news editor** (914) 988-9630
Peter Smith **Web development manager**
David Ramel, **online production coordinator and e-mail newsletter editor**

CONTRIBUTING COLUMNISTS

Joe Auer Jim Champy Michael Cusumano
John Gantz Dan Gillmor Peter G. W. Keen
Bill Laberis, David Moschella, Fran Quittel,
Paul A. Strassmann, Don Tapscott, Ed Yourdon

CONTRIBUTING WRITERS

Leslie Goff, Amy Helen Johnson, Deborah Radcliff

COMPANIES IN THIS ISSUE

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com

10COM CORP 14,60,88
ABERDEEN GROUP INC 97
ACCEL PARTNERS 72
ACER AMERICA CORP 60
ADC TELECOMMUNICATIONS INC 30
ADDISON WHITNEY 60
ADVANCED FIBRE COMMUNICATIONS INC 10
AEROSPACE INDUSTRIES ASSOCIATION 1
AGILENT ACCEPTANCE LLC 8
AGRILINK.COM 60
ALCATEL SA 60,80
ALLIANCE FOR INTERNET SECURITY 8
AMAZON.COM INC 4,14,30,44,63
AMERICA ONLINE INC 14,16,28,48,52,56
AMERICAN EXPRESS CO 78
AMP RESEARCH INC 1
ANDERSEN CONSULTING 42,48,52
APPLE COMPUTER INC 60,66
ARC ADVISORY GROUP INC 10
ARIBA INC 10
ARTHUR ANDERSEN LLP 60
ASCEND COMMUNICATIONS 30
AT&T CORP 4,26,72
AT&T WORLDNET INC 72
AUTOSPACE INC 12
BANK ONE CORP 24
BEA SYSTEMS INC 60,66
BENDIXH & NOBMUH AND SYRUMS 10
BRADY CORP 60
BRIGHTMAIL INC 72
BRITISH TELECOMMUNICATIONS PLC 60
BROADBAND OFFICE INC 30
BROADVISION INC 60
BUFFALO HOSPITAL SUPPLY CO 48
BUREAU OF LABOR STATISTICS 60
CALDERA SYSTEMS INC 8
CALIFORNIA HEALTHCARE FOUNDATION 8
CANADIAN IMPERIAL BANK OF COMMERCE 6
CAPITAL ONE FINANCIAL CORP 8
CAREINSITE INC 24
CARLSON HOSPITALITY WORLDWIDE 28
CARNEGIE MELLON UNIVERSITY 36
CARNIVAL CRUISE LINES 64
CASIO INC 14
CHASE H&Q 60
CHEMDEX CORP 60
CIA 6
CISCO SYSTEMS INC 30
CLICKHEAR INC 58
CNET INC 58
COMPAQ COMPUTER CORP 14,56,58
COMPTEL 58
COMPUTER ASSOCIATES INTERNATIONAL INC 9,63,60
COMPUTER ECONOMICS INC 60
CONTEXT INTEGRATION 42
CORESTATES BANK OF DELAWARE 4
C-PORT CORP 60
CROSSLINK CAPITAL INC 72
CVS CORP 24
DAIMLERCHRYSLER 4,12
DEFENSE LOGISTICS AGENCY 4
DELL COMPUTER CORP 28,60
DELOITTE & TOUCHE 24
DEUTSCHE BANK AG 60
DIGITAL IMPACT INC 60
DRUGEMPORIUM.COM INC 60
DRUGSTORE.COM 60
DUPONT CO 60
E.PHARMY INC 60
EARTHLINK INC 72
EAS BANK CHEMICAL CO 60
EASTMAN KODAK CO 60
EBAY INC 4,8,12,63
ELECTRONIC DATA SYSTEMS CORP 78
ELI LILLY AND CO 52
EMC CORP 60
ENMASE TECHNOLOGIES INC 60
E-STEEL CORP 1
EUROPEAN INTERNET FOUNDATION 60
EWATCH INC 52
EXCITE INC 72
EXTENSITY SOFTWARE INC 60
EXXON MOBIL CORP 60
FBI 4
FEDERAL COMMUNICATIONS COMMISSION 10
FEDERAL EXPRESS CORP 58
FEDERAL TRADE COMMISSION 8
FEDERATED DEPARTMENT STORES INC 60
FIDELITY INVESTMENT 4
FILEMAKER INC 60
FIREPOND INC 12
FIRST USA BANK N.A. 4
FLASH COMMUNICATIONS INC. 24
FLATIRON PARTNERS 72
FLEET BANK 4
FLEET MORTGAGE GROUP INC 4
FOSDICK INC 60
FORD MOTOR CO 4,12
FORRESTER RESEARCH INC 16,9,12,14,42,48,58
FREEDDF MKC 4
FREEMARKETS INC 1
FRY MULTIMEDIA INC 60
FUJI HEAVY INDUSTRIES LTD 12
FUJITSU 36
GALILEO INTERNATIONAL INC 50
GARTNER GROUP INC 16,12,20,24,48,66,67
GE AIRCRAFT ENGINES 42
GE ELECTRONIC CAPITAL CORP 4
GENERAL MOTORS CORP 1,4,12,66
GIGA INFORMATION GROUP INC 9,24,30,72
GLOBAL LOGISTICS TECHNOLOGY INC 46
GOZINET INC 95
GOCARDO COM 42
GRANT THORNTON LLP 4
GREAT PLAINS SOFTWARE INC 60
GRIDNATH NETWORKS INC 30
GTE CORP 52
HANDSPRING INC 64
HARMAN'S ENTERTAINMENT INC 76
HEALTH INTERNET ETHICS 8
HEAL THCENTRAL COM 6
HEAL THEON/WEBMD CORP 24
HERCULES INC 42
HEWLETT-PACKARD CO 14,26,60
HITACHI LTD 60
HOOKER CHEMICAL & PLASTICS CORP 60
HOWREY SIMON ARNOLD & WHITE LLP 10
IBM GLOBAL SERVICES INDIA 36
IBM 4,26,62,66,80
I-CAN INC 58
IMPROVENET INC 46
INFORMATIVE INC 14
INTEL CORP 4,26,44
INTELSYS ELECTRONIC COMMERCE INC 10
INTERACTIVE FINANCIAL EXCHANGE 7
INTERNATIONAL DATA CORP 14,24,36,58
INTERNET HEALTHCARE COALITION 6
IOMEGA CORP 60
ISUZU MOTORS LTD 12
IVILLAGE COM INC 6
J. CREW GROUP INC 78
J.P. WALD CO 1
J.B. HUNT TRANSPORT SERVICES INC 1
JUNO ONLINE SERVICES INC 72
JUPITER COMMUNICATIONS INC 24
KANA COMMUNICATIONS INC 60
KEENAN VISION INC 60
KPMG CONSULTING LLC 60
KRAFT FOODS INC 10
LIMITED TECHNOLOGY SERVICES 60
LIZ CLAIBORNE 46
LOCKE LIDDELL & SAPP LLP 60
LOOLITY INC 1
LOTTERY.COM 14
LOTUS DEVELOPMENT CORP 60
LUCENT TECHNOLOGIES INC 60,30
LYCOS INC 4
MACYS.COM 60
MAIL ABUSE PREVENTION SYSTEM LLC 72
MARKETFUSION INC 16
MARRIOTT INTERNATIONAL INC 4
MASTECH CORP 52
MCHUGH SOFTWARE INTERNATIONAL 1
MEDBUY.COM INC 28,60,62
MEDICAL MANAGER CORP 24
MEDICONSULT.COM LTD 8
MERCKEN RESEARCH INC 4
MERRILL LYNCH & CO 4
META GROUP INC 24,60
METALSITE LLP 60
METROWERKS CORP 60
MICROSOFT CORP 4,8,9,10,14,16,20,24,28,30,44,58,60,66,80,90
MIDLANTIC NATIONAL BANK/DELAWARE 4
MIPHONEX TECHNOLOGIES INC 30
MIT 36,42
MITEQ INC 6
MOBIL CORP 42
MOBILE INSIGHTS INC 14
MONTANA POWER CO 60
MORGAN STANLEY DEAN WITTER & CO 60
MOTOROLA INC 30
MOTOROLA INDIA ELECTRONICS LTD 28
MSAS GLOBAL LOGISTICS 7
NASA 8
NATIONAL SEMICONDUCTOR CORP 78
NAVISITE INC 59
NEC CORP 15,60
NEEDZBUY.COM INC 10
NET PERCEPTIONS INC 97
NET GENESIS CORP 97
NETSCAPE COMMUNICATIONS CORP 60,72,97
NETSTOCK DIRECT CORP 60
NETWORK APPLIANCE INC 60
NETWORK ASSOCIATES INC 58
NEWBRIDGE NETWORKS INC 60
NISSAN COMPUTER CORP 12
NISSAN NORTH AMERICA INC 12
NOKIA CORP 30
NORTEL NETWORKS CORP 30
NORTHEASTERN UNIVERSITY 4
OAKAR RUFFALANI ARNOLD 12
OM INTERNATIONAL INC 1
ONEHEALTH NETWORK CO 24
OPENTRAVEL ALLIANCE 1
ORACLE CORP 8,9,14,26,60,78
ORACLEMOBILE.COM 14
OSPREY SYSTEMS INC 60
OSTREAM SOFTWARE INC 60
OWENS CORNING 52
OXFORD UNIVERSITY PRESS 36
PACIFIC GAS & ELECTRIC CO. 10
PACKAGINGINSIDER.COM 60
PARGAIN TECHNOLOGIES INC 30
PALM INC 14,16,64,66
PECO ENERGY CO 6
PEOPLESOFT INC 46,78
PEROT SYSTEMS CORP 60
PIMLICO SOFTWARE INC 60
PLANT WIDE RESEARCH GROUP 10
POLYMERIFIC.COM 6
POLYSORT INC 6
POSITIVE SUPPORT REVIEW INC 60
PROCTER & GAMBLE CO 1
PRUDENTIAL SECURITIES INC 60
QWA INC 1
QUOKKA SPORTS INC 8
REALSEXNETWORKS INC 8
RED HAT INC 8,58
REMEDY CORP 60
RESONATE INC 60
RETAIL TECHNOLOGIES INTERNATIONAL INC 59
RHI CONSULTING INC 30
RIGHTFREIGHT.COM 10
ROBERTSON STEVENS 4
SAAB AB 12
SAP AG 8,48,60,78
SATYAM COMPUTER SERVICES LTD 28
SECURITIES AND EXCHANGE COMMISSION 60
SELECTICA INC 10
SENDMAIL INC 72
SIEMENS AG 14,58
SIEMENS COMMUNICATIONS DEVICES 14
SIPEL MCDONALD VENTURES 72
SMARTFORCE COM INC 60
SOFTWARE.COM INC 72
SPECIALTY LABORATORIES INC 60
STAMPS.COM INC 58
STRATACOM INC 30
SUN MICROSYSTEMS INC 30,60,63,66
SUN NETSCAPE ALLIANCE 97
SUPPORT.COM INC 16
SUZUKI MOTOR CORP 12
SYMANTEC 60
SYMBOL TECHNOLOGIES INC 14
TATA CONSULTANCY SERVICES 60
TECHNICAL CONNECTIONS INC 64
TECHNOLOGY CROSSOVER VENTURES 72
TECHTRADER INC 42
TELEFONICA 60
THE APACHE SOFTWARE FOUNDATION 60
THE BURTON GROUP 1
THE CHASE MANHATTAN BANK 60,78
THE CHASE MANHATTAN CORP 8,52
THE COCA-COLA CO 36
THE CONCOURS GROUP 60
THE ENTERPRISE STORAGE GROUP 8
THE FAIRPOINT GROUP 14
THE LIMITED INC 60
THE LUDGATE CENTER INC 60
THE QUAKER OATS CO 1
THE SIERRA CLUB 60
THE WHARTON SCHOOL 36
THE WORLD BANK 60
THE YANKEE GROUP 1,30
THESTREET.COM INC 99
TIME WARNER INC 46
TOSHIBA CORP 36
TOYS R US INC 52
TRADESPARK INC 28
TREND MICRO INC 8
TRILOGY SOFTWARE INC 12
TYSON FOODS INC 8
U.S. DEPARTMENT OF COMMERCE 8
U.S. DEPARTMENT OF DEFENSE 8
U.S. DEPARTMENT OF THE INTERIOR 4
UNIGRAPHICS SOLUTIONS INC 12
UNIINTERNETWORKING INC 60
VAULT.COM INC 52
VERITAS SOFTWARE CORP 60
VHA INC 8
WAL-MART STORES INC 1,52
WEBLEY SYSTEMS INC 60
WEBLINE COMMUNICATIONS CORP 60
WELLS FARGO & CO 60
WESTERN COMMODITIES TRADING INC 60
WIPRO INFOTECH 60
WOMENCONNECT.COM CORP 60
WORLD WIDE WEB CONSORTIUM 1
XEROX CORP 14
XTRA ON-LINE CORP 16
YAHOO INC 8,52
ZEBRA MARKETING ONLINE SERVICES 4

Continued from page 1

Standards

must set the standards, at least initially. "If you were to wait to get the global community to agree on a generic business-to-business standard, you'd never get one," he said.

E-Steel, for example, is working on the Steel Markup Language to enable the industry's buyers and sellers to exchange product and order information. Costello said he thinks that as individual vertical working groups come up with XML formats, they will borrow from one another.

That has already happened with the insurance industry's standards-setting body, the Association for Cooperative Operations Research and Development (ACORD) in Pearl River, N.Y. Where it made sense, ACORD's property and casualty division adopted the XML-based framework developed by the Interactive Financial Exchange, the online financial service industry's standards group, said ACORD director Beth Grossman. "We thought there would be a lot of synergies," she said.

Seeking to prevent fragmentation and move quickly, ACORD's property and casualty group used established formats wherever possible, reworking electronic data interchange standards to develop its dictionary of data tags.

Yet despite their best efforts, that's not going to solve every problem. "There are a lot of vertical industries out there like finance and insurance and health care that are related. But they're having XML initiatives driven out of separate verticals, and there's no horizontal standards effort to pull all those together," said Kevin Schipani, a group manager at ACORD.

As a result, there's much duplication of effort across the various industry-based standards groups, said Nick Lanyon, who chairs a working group within the OpenTravel Alliance in Washington, which will soon publish its first XML standard, a customer profile format, for the travel industry.

"We had to implement a lot of infrastructure stuff, which we rather would have picked up from [another] industry group," Lanyon said. "But in the travel industry, there are some real problems that XML could help solve now."

Yet signs of hope are emerging. On the data side, the World Wide Web Consortium expects to finish an XML schema specification this year that will standardize the way documents and data elements are defined — and force the industry groups that have already developed data definitions to convert to the new format.

United Nations Involved

Another emerging effort backed by several major industries is electronic-business XML (ebXML), which is being developed by a group that comprises members from the United Nations Centre for the Facilitation of Procedures and Practices for Administration, Commerce and Transport and the Organization for the Advancement of Structured Information Standards. The group hopes to complete some work in the next 18 months.

"It holds the most promise for identifying the best-of-breed recommendations for XML interoperability," said Tom Warner, chairman of the Washington-based Aerospace Industries Association's e-commerce work group. He also pointed out that ebXML seeks to define repositories, registries, transport and packaging protocols, security mechanisms, architecture and business process models.

Josh Walker, an analyst at Forrester Research Inc. in Cambridge, Mass., said new standards groups keep popping up. As they do, he said, "there's certainly confusion around what businesses are doing and what individual working groups are doing."

Continued from page 1

Online Auctions

And purchasers are only too happy to tell the world about it, trumpeting the news in press releases the way they used to tout quarterly profits or slam-dunk customer wins.

"Before, you never would hear about procurement savings. Now, traditional companies are using it to tout that they're an Internet player, and that they haven't been left on the sidelines in the business-to-business revolution," said Steve Kafka, an analyst at Forrester Research Inc. in Cambridge, Mass. "It's funny, but the Internet has made procurement sexy."

For example, GM announced in February that it saved $147 million during an Internet-based reverse auction for rubber sealing packages. Eighteen prequalified suppliers bid on GM's business at the automaker's TradeXchange Web site.

Chicago-based Quaker Oats announced savings of $8.5 million in an online auction for transportation services and glycerine and other raw materials. The auction was set up by FreeMarkets Inc. in Pittsburgh.

State officials in Pennsylvania said they saved more than $8 million buying everything from salt for icy roads to aluminum for license plates at live online auctions, also set up by FreeMarkets. In one 30-minute auction, the state saved $1.5 million buying sugar.

The savings represent the difference between what the state paid at the auctions and what it paid for the same products previously under the traditional request-for-proposal process.

"Frankly, it gets great [cost savings] results, but it also aligns them as movers and shakers," said Jim Zuffoletti, FreeMarket's director of market-making. He said FreeMarkets has arranged auctions for everything from plastic bags to tax preparation services.

Such factors as access to more suppliers, pricing pressure on suppliers who must underbid one another in real time and significant time reductions — from weeks to minutes in many cases — can yield savings ranging from 2% to 25%, Zuffoletti said.

But companies this deeply involved in digital marketplaces are still in the minority.

"Anyone who's buying direct products [at Internet auctions] is ahead of the curve," said Emily Andren, an analyst at Stamford, Conn.-based Gartner Group Inc. Most companies have long-term relationships with suppliers. "The longer term the relationships, the more reluctant companies are to destroy them and go online and do business," she said.

Compared with countless phone calls and weeks of pushing paper back and forth with potential suppliers, live online auctions are "very exciting, with tense moments in each of them," said Gary Ankabrandt, assistant chief counsel at the Department of General Services in Pennsylvania. "During the first 20 minutes, there might be very little activity, then the bidders — all of whom can see competitors' bids — get serious in the last minutes."

Savings accrue for buyers not only in pricing, but also in the reduced time spent negotiating and closing deals.

When Quaker Oats did things the "old-fashioned way," getting three rounds of bids from six bidders could take as long as three weeks, said Carl Curry, a vice president at Quaker Oats. By contrast, he said, "we did the FreeMarkets auction in 30 minutes."

Suppliers enjoy no such benefits, said Paul Post, purchasing manager at J. R. Wald Co. in Huntingdon, Pa., which sold aluminum for license plates to Pennsylvania in an online auction last year.

"It took a lot more time for us because you've got to get the software from the auction company, load it and train [people to use] it. Then you've got to tie someone up the whole time the bidding is going on," said Post. "For suppliers, it's a lot more time than writing it down on a piece of paper and sending it in."

For information technology groups, the Internet auctions are both a blessing and a curse, said Karl Jessen, an analyst at The Yankee Group in Boston.

"IT has a more limited role in [purchasing via online auctions] because companies don't need to buy and install software. They access the auctions through a browser," he said.

On the other hand, because access is so easy, companies are likely to conduct auctions at several digital marketplaces. That means integrating data from multiple trading exchanges into corporate enterprise systems, Jessen said.

Sun/Netscape Unveils Server To View Legacy Apps Online

BY CAROL SLIWA

The Sun/Netscape Alliance last week announced new server software aimed at helping corporations and service providers conduct the membership management, personalization, content aggregation, security and legacy integration services needed to run an e-commerce hub site.

The iPlanet Portal Server will act as a proxy between Web browsers and legacy applications, allowing users to view and use those applications in a secure fashion.

The new product will ship with the iPlanet Web Server and Directory Server. It will have built-in application programming interfaces to work with personalization and customer analysis products, such as those from E.piphany Inc., net.Genesis Corp. and Net Perceptions Inc. The Portal Server will also work with the optional iPlanet Application Server.

"Corporations have been faced with information overload in this Internet economy," said Tim Minahan, an analyst at Aberdeen Group Inc. in Boston. "[The] iPlanet [Portal Server] has the potential to pull all those resources into a logical format."

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0389697 CANADIAN POSTMASTER: Please return undeliverable copy to PO Box 1632, Windsor ON N9A 7C9. Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last week in December and the last week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 2000 by Computerworld Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights, permission to photocopy for internal or personal use or quantity reprint rights are granted by Computerworld, Inc. for a fee of $1.50 per page, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints minimum 100 copies) and permission to reprint may be purchased from Ray Trumbach, Computerworld Reprints, c/o Reprint Management Services, Greenlight Corporate Center, 191 Ohio Homestead Lane, Lancaster, Pa. 17601 (717) 399-1900 ext. 124. Fax (717) 399-8900 (days) site: www.rmsreprints.com. E-mail: rtrumbach@rmsreprints.com. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4 a copy; U.S. - $48 a year; Canada - $160 a year; Central & So. America $450 (surface) a year; Europe - $290 a year; all other countries - $285 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 3044, Marion, Ohio 43306.

ABC ABP

FRANK HAYES/FRANKLY SPEAKING

Microsoft and Java: It's over

MICROSOFT is finally getting out of the Java business. And that's good news. Really. For Microsoft, for Sun Microsystems and most of all for corporate IT shops. According to Microsoft's product road maps, its Visual J++ development tool isn't being upgraded with new versions of Java. And around the time the next major version of Visual J++ is due out — best guess now is spring of next year — Microsoft's lawsuit-plagued Java license from Sun will expire.

Now understand, no one confirms that Microsoft is phasing out Java. Officially, Microsoft managers say they can't talk about it because of Sun's long-running lawsuit against Microsoft. In practice, Microsoft managers used to spout off about the lawsuit and their Java plans at any opportunity.

But reports from Microsoft's VBITS conference earlier this month make it clear that Visual Basic, Visual C++ and other tools will be aggressively beefed up over the next year to meet the needs of e-commerce developers. And Microsoft's version of Java won't.

Maybe that sounds like bad news for Java — Microsoft bailing on a highly touted technology.

But in fact it's good news.

Why? Because the needle match between Microsoft and Sun over Java has wasted more than enough IT shop time and dollars in efforts to deal with incompatibilities between the two versions. Microsoft and Sun may have money to burn — but we don't.

Microsoft and Sun may have money to burn — but we don't.

It's good news because it simplifies developers' choices. For all-Microsoft-all-the-time shops, Microsoft's proprietary tools — Visual Basic, Visual C++ and yet-to-come XML tools like BizTalk — are now clearly the way to go.

For the rest of the world, where desktops and servers from multiple vendors are a fact of life, Java is one — though not the only — tool to use for cross-platform applications.

It's good news because desktop PC management will be simplified by getting Java out of Internet Explorer, into which it is now built. Want Java? Install it as a Web browser plug-in, just like RealAudio or Shockwave. Don't want it? Don't install it.

Like the version you've got, but you're worried about the next release's compatibility or security? Don't upgrade. No more guesswork — you'll know what you get.

It's good news for Microsoft, which gets out of a no-win situation. Microsoft wanted to make Java its own. That didn't work out, thanks to Sun's lawsuit. The judge has already tentatively ruled that Microsoft violated Sun's Java copyrights. In January he reinstated an order forcing Microsoft to follow Sun's Java specifications.

That's the kind of straitjacket Microsoft — especially its newly minted Chief Software Architect Bill Gates — just hates.

And it's good news for Sun, which gets rid of its most unfriendly, sabotage-prone Java licensee. Sun has trouble enough keeping signals straight with its friends. It's well rid of Microsoft.

Good news all around, right? Of course, if everybody wins, that usually means everybody loses something, too.

IT shop developers lose Microsoft's Java programming tools. There are plenty of alternatives — from IBM, Borland, Metrowerks, Symantec and others — but Microsoft does know how to make a development environment.

Microsoft loses leverage. "Cross-platform" is no longer just a buzzword for its corporate customers — it's a law of nature.

Linux, Unix, handheids and the resurgent Macintosh are eating away at Microsoft's Windows base on both the front and back ends. Losing one more competitive feature could be expensive in the long run. But for Microsoft, keeping Java is expensive now.

And Sun? Sun loses its biggest excuse for Java's sbortcomings.

Pretty soon, if Java doesn't do it right — well, there won't be Microsoft to blame. ◗

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

LAW & ORDER A Southwestern city's police department contracts in 1989 for a records management system. Two years later it finally arrives – in perniciously nonrunning condition. Swat Team after Swat Team is sent in to debug the system and get it running. No joy. Finally it's "start over again," says a pilot fish who lasted 10 months on the project himself. And who's on the street after this fiasco? The longtime manager in charge "has been promoted to captain level, with back pay and a cell phone," says pilot fish. "I'm retiring."

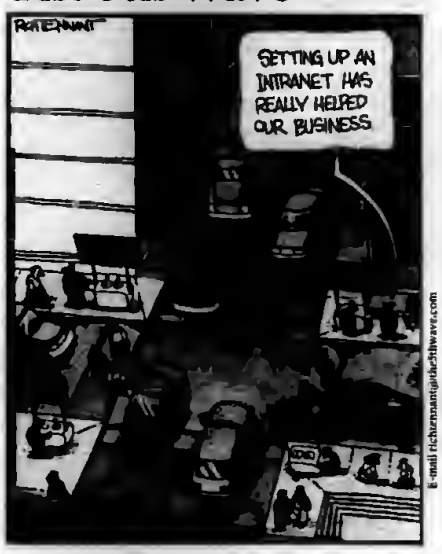
LAW & ORDER: SPECIAL VICTIMS UNIT Renegade hacker turned law-abiding security consultant is minding his home network and finds he's being scanned. Follows the hacker's trail to the firewall at local law offices. "You've got a security problem," the ex-hacker fish tells the firm, explaining someone must have cracked the law firm's network and used it as a base of attack. The firm's partners say they're gung ho to fix the problem. A tech in the trenches eventually tells pilot fish the solution the partners decided on: change phone numbers and passwords. "Do you think it's going to help?" asks the fish. "Nope," says the tech. Now they won't even return the fish's calls.

RULES OF THE GAMES No games is the policy at one big consulting outfit. IT blocks employee access to Web game sites. Even sends around a "hysterical e-mail every six months about not going to nonbusiness Web sites," reports a pilot fish. Funny, though – the company intranet has several such links to visit during off hours.

E-COMMERCE server is so pokey, the bosses are ready to move it offshore. Pilot fish headbutts vendors, adds specialty hardware and squeezes out a 60% improvement. "Ahem," says pilot fish to brass. "What about a simple thank-you?" "Didn't Mary [in some other department] say that?" brass responds. "Mary's not my supervisor," our fish points out. Result: Pilot fish has been reassigned.

Sharky hears that a big cell phone maker is having trouble in its new offices. The reflective window coatings there are supposed to keep out too-bright sun, but they also block wireless communications. They'll end up installing repeater devices just to be able to use their own products. Repeat something to me: **sharky@computerworld.com**. Get it by wire every day: *computerworld.com/sharky*. If it prints, you get a Shark shirt.

The 5th Wave



Spring is near...

Hosted by
Mark Hamill

E-Commerce Tools For Web Entreprennnrs
CYNETGlobal.com

Snpnrmarket Shopping Solutions
ShopEaze.com

Electrify Your Drive
General Motors Corporation

Digital Destination For African Amnricans
BET.com

Dne-Stop Ticket Purchasing
Tickets.com

Cutting-Edgn Check Processing
NBDS, Inc.

Surfing For Extreme Sports
TroubleWear.com

Fun And Frinndly Kid Connnction
SurfMonkey.com

Barbecun Lovers Treat
BBQ.com, Inc.

Gateway To Managing Your Finances
Quicken.com

Elnctronics Market, The New Era
Arrow Electronics, Inc.

Internet Forum For Pnopln Of Color
DiversityVillage.com

Business-To-Business Internet Auction
ComAuction.com

Thn Latest News For Industriai Eqnipmnnt
iMark.com

Hassle-Free Rnbates
CyberRebate.com

Bingo And Beyond
Bingo.com

Dnline Business Financing
LiveCapital.com

Beaming Money On-The-Go
PayPal.com

The Electronic Era Of Taxus
www.irs.gov/elec_svs

Do you have a story? Email: talk@tvi.net

.com is brought to you in part by COMPUTERWORLD THE NEWSPAPER FOR IT LEADERS www.computerworld.com

www.kingston.com/tomorrow

HOW DO YOU GET TO BE THE WORLD'S LEADING MEMORY MANUFACTURER? If you're Kingston,® you do it by working with pioneers like Intel® and Rambus® to create revolutionary technologies like Direct Rambus. You do it by being at the forefront of today's emerging memory designs with PC133 and DDR. You do it by tripling your engineering staff and investing over $100 million to support high-volume production for those emerging standards of memory. You do it by developing memory for tomorrow's hottest systems, with DRAM and system manufacturers like Hitachi® and Toshiba®. And you always ship every memory module with a lifetime warranty, 100% testing of every cell on every chip on every module, 100% guaranteed compatibility, and free technical support. In short, you do it through unparalleled commitment and dedication. So what are you waiting for? To find out how to buy Kingston memory, and experience the future today, go to www.kingston.com/tomorrow. Or call (800) 435-0669.

Kingston TECHNOLOGY
COMPUTING WITHOUT LIMITS®

Kingston Technology [illegible] All other trademarks and registered trademarks are the property of their respective owners.